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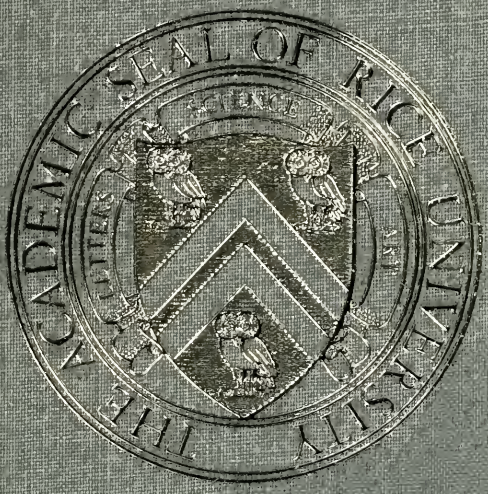
SEMICENTENNIAL

PUBLICATIONS



THE BOARD OF GOVERNORS AND PRESIDENT

of

WILLIAM MARSH RICE UNIVERSITY

present with their compliments

this volume recording the events of the

INAUGURATION OF PRESIDENT KENNETH SANBORN PITZER AND
THE SEMICENTENNIAL OBSERVANCES AT THE UNIVERSITY

October Tenth to October Thirteenth

Nineteen Hundred Sixty-two

The Inauguration of Kenneth Sanborn Pitzer

AND

Semicentennial Ceremonies

AT

WILLIAM MARSH RICE UNIVERSITY

Kenneth Sanborn Pitzer

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Semicentennial Ceremonies

AT

WILLIAM MARSH RICE UNIVERSITY

October 10-13, 1962

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Foreword

CHARTERED by its founder in 1891 as the William Marsh Rice Institute, the present Rice University began its first session with an entering class of seventy-seven students on September 23, 1912, under the presidency of Edgar Odell Lovett. The opening of the institution was celebrated formally by an Academic Festival held on October 10, 11, and 12, 1912. The first two days were featured by a series of lectures either read by title or delivered by a distingushed group of eleven internationally renowned scholars, and the final day was set aside for the formal dedication of the new university. The lecturers included Rafael Altamira y Crevea, Emile Borel, Benedetto Croce, Hugo de Vries, Sir Henry Jones, Baron Dairoku Kikuchi, John William Mackail, Wilhelm Ostwald, Sir Willam Ramsay, Frederik Carl Størmer, and Vito Volterra. The last-named also presented a eulogy on Henri Poincaré, whose untimely death prevented his participation in the Academic Festival. These lectures along with other material relating to the opening of the University are printed in the three volumes of *The Book of the Opening of the Rice Institute.*

During the ensuing fifty years, the Rice Institute grew in prestige as it followed the course laid out by President Lovett. Dedicating itself to the pursuit of excellence, it limited its undergraduate enrollment to about 450 Freshmen each year. Following the end of World War II, Dr. Lovett retired, and Dr. William V. Houston succeeded him as President in 1946. Under Dr. Houston, there was a renewed period of growth in faculty and physical plant and an increased emphasis upon research and graduate study. President Houston retired in 1960, and Dr. Carey Croneis, the Provost, served as Acting President until July 1, 1961, when the Board of Governors elected Kenneth Sanborn Pitzer as the third President. The institution on July 1, 1960, had meanwhile assumed the title of William Marsh Rice University in order to correct the impression held by many that the Rice Institute was a technical school.

It was a fortunate circumstance that President Pitzer should be formally inaugurated during the observance of the fiftieth anniversary of the opening of the University. Recalling the Academic Festival of 1912, plans were made for the inauguration to be held on October 10, 1962, and for a series of Semicentennial lectures to be delivered by distinguished visiting scholars on October 11 and 12. These ceremonies and lectures were followed on October 13 by Homecoming Day and the dedication of Rayzor Hall, the new humanities building.

This book is intended to describe and preserve the record of the various activities during the period October 10–13, 1962. The lectures presented during the Academic Festival are reproduced in another volume of the Rice University Semicentennial Publications, except for that delivered by Professor Arnold J. Toynbee at the Semicentennial Convocation on the morning of October 11, 1962. This lecture appears in both this and the other volume.

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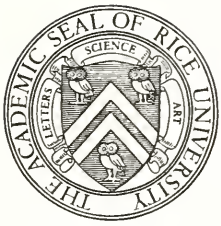


The Inauguration of

KENNETH SANBORN PITZER

as Third President of

WILLIAM MARSH RICE UNIVERSITY

Two-thirty o'clock
Wednesday, October the Tenth
Nineteen Hundred Sixty-two
Houston, Texas

Kenneth Sanborn Pitzer: A Biographical Sketch

KENNETH SANBORN PITZER, third President of William Marsh Rice University, is a native of Pomona, California, who received his Bachelor of Science degree from the California Institute of Technology in 1935 and his Doctor of Philosophy degree in chemistry from the University of California at Berkeley in 1937. Joining the faculty at Berkeley, he became professor of chemistry in 1945 and served for a time as Assistant Dean of Letters and Science and later as Dean of the College of Chemistry at the University of California. In 1961 he accepted the presidency of Rice University.

Author of several books and numerous articles in the field of chemistry, he pioneered in the application of spectroscopic and statistical methods to the study of complex organic molecules and their reactions.

He served the United States war effort as Technical Director of the Maryland Research Laboratory in 1943 and 1944 and again took leave from academic duties to serve as Director of Research for the Atomic Energy Commission from 1949 to 1951. Since 1958 he has been a member of the General Advisory Committee to the Atomic Energy Commission, and from 1960 to 1962 he was chairman of this committee.

The research contributions of Dr. Pitzer range from inorganic chemical syntheses to scattering experiments in nuclear physics, but a majority concern the development of general principles for predicting the chemical and physical properties of broad classes of substances. The results of these investigations are reported in 175 articles in scientific journals. He is also the author or co-author of three books and has contributed chapters to other volumes.

President Pitzer has received numerous prizes and awards. These include the American Chemical Society Award in Pure Chemistry (1943), the Precision Scientific Company Award in Petroleum Chemistry (1949), the U.S. Chamber of Commerce Award as one of

the ten outstanding young men of the nation in 1950, the University of California Alumni Association Award as "Alumnus of the Year" in 1951, a Guggenheim Fellowship (1951), and the Clayton Prize of the London Institution of Mechanical Engineers (1958). Wesleyan University conferred an honorary Doctor of Science degree on him in June, 1962.

He is a member of the American Chemical Society, the Faraday Society, and the American Philosophical Society. He was elected a member of the National Academy of Sciences in 1949 and served as chairman of its chemical section from 1958 to 1962. He is a fellow of the American Physical Society, the American Institute of Chemists, the American Academy of Arts and Sciences, and the American Nuclear Society. He also holds membership in many honorary societies.

President Pitzer was married in 1935 to Jean Elizabeth Mosher. They have three children, Ann, Russell, and John, and one grandchild.

The Inaugural Ceremonies

The inauguration of President Pitzer on the afternoon of October 10, 1962, began the three days of ceremonies and lectures commemorating the fiftieth anniversary of the opening of William Marsh Rice University in 1912. Delegates began to arrive on the afternoon of October 9 and registered at the Semicentennial Headquarters in the Rice Memorial Center on that afternoon or the following morning. A world-wide array of 276 institutions of higher learning and 77 learned and professional societies and other institutions were represented by one or more delegates.

At noon on October 10 the delegates, the Semicentennial lecturers, other distinguished guests, and their wives or husbands had lunch at one of the five residential colleges on the campus—Baker, Hanszen, Wiess, and Will Rice Colleges for men and Jones College for women. They likewise had lunch at the colleges on the two succeeding days, a system of rotation of delegates and guests being used to give them a better opportunity to see more of the University and to permit the students to become better acquainted with them. Many of the visiting lecturers spoke informally at these lunches in the colleges.

The Rice students played a very active and significant role throughout the period of the inauguration and the Semicentennial observance. In addition to the entertainment of delegates at lunch, the students assisted in registration, transportation, and a variety of special tasks. The Senior Class marched in the academic procession, and the members of the Rice Band and the Rice Chorus made a splendid contribu-

tion despite the brief time available for practice. The Rally Club and the Sophomore Class also supplied special aid as required. By the cordiality with which they welcomed the delegates and guests and by their enthusiastic attendance at the ceremonies and lectures, the students contributed much to the success of the inauguration and the Semicentennial observance.

The inauguration ceremonies began at 2:30 P.M. They were held on the plaza on the east side of Lovett Hall. Immediately in front of the Sallyport was the speakers' platform, which seated the Faculty, the Governors, and those participating in the ceremonies. The Rice Band, directed by M. Holmes McNeely, was on a special stand to the left and the Rice Chorus, under the direction of Professor Arthur Hall, on a similar stand to the right. Immediately in front of the speakers' platform were the delegates sent by other institutions to attend the ceremonies. On the lawn behind the delegates there was seating for the audience, with a special section reserved for the robed Senior Class. Because of the extremely hot weather, which reached a high of 95 degrees Fahrenheit at 12:30 P.M., many of the audience sought shade in preference to the seats directly in front of the speakers' platform.

The academic procession formed in Rayzor Hall and the Fondren Library under the direction of the University Marshals. The Senior Class, marching in a column of fours, proceeded from Rayzor Hall through the Fondren Library cloisters and took position with the head of the line abreast and to the south of the statue of William Marsh Rice in the Academic Court. The Delegates of Learned and Professional Societies and Other Institutions, marching in a column of twos, with delegates of the newest institutions in the lead, proceeded from the Fondren Library parallel with and to the north of the Senior Class. They were followed by the Delegates of the Institutions of Higher Learning, also marching in a column of twos. The two columns began to march as the Band played the "Triumphal March" from *Aïda,* the Seniors turning right and passing around the south end of Lovett Hall to take their seats in the section allotted to them, and the delegates turning left to pass around the north end of Lovett Hall to take their seats in front of the speakers' platform.

The Rice University Faculty, the special guests, the members of the Board of Governors, and the President's Party followed the Senior Class, marching in a column of twos around the south end of Lovett Hall and taking their places on the speakers' platform. The special guests were the Honorable Albert Thomas of the United States House of Representatives, Mayor Lewis Cutrer of the city of

Houston, Judge William M. Elliott of Harris County, Dr. John W. McFarland, Superintendent of the Houston Independent School District, and Everett Collier, President-elect of the Association of Rice Alumni. The members of the President's Party were President T. Keith Glennan of the Case Institute of Technology, Dr. William V. Houston, Honorary Chancellor of Rice University, George R. Brown, Chairman of the Board of Governors of Rice University, the Reverend William G. Pollard, Episcopal minister and Executive Director of the Oak Ridge Institute of Nuclear Studies, Chancellor Carey Croneis, Professor Frank E. Vandiver, Willoughby C. Williams, President of the Association of Rice Alumni, and Robert L. Clarke, President of the Rice University Student Association.

Following the precedent set at President William V. Houston's inauguration in 1947, President Pitzer, accompanied by Dr. Houston, now Honorary Chancellor and Distinguished Professor of Physics, stopped briefly at the statue of William Marsh Rice in the Academic Court and placed on the steps a wreath honoring the founder of the University. The President and his party then joined the academic procession.

Dr. Houston presided over the inaugural ceremonies.

As soon as the academic procession ended, a color guard, composed of two cadets from the Army R.O.T.C. unit and two midshipmen of the Navy R.O.T.C. unit, marched on the platform bearing the national colors and the colors of Rice University. Following the singing of the national anthem, the colors were mounted in receptacles placed at the rear of the speakers' platform.

The Reverend Pollard then gave the invocation in the following words:

> Almighty God, the source of all truth and the giver of all knowledge, who through the love and labor of many hast built us here a goodly heritage and crowned it with honor; accept, we beseech Thee, our humble thanks for past achievements and future hopes; behold with Thy continuing favor this university, that knowledge may be increased among us and all true learning flourish and abound. Preserve in this place an unblemished name, enlarge it to a wider usefulness, and grant that all who teach and all who learn may, in humility of heart, ever look unto Thee, who art the fountain of all wisdom. Pour the abundance of Thy blessing on him to whom we here entrust the leadership of this university; that he may have fervent zeal in his work, the spirit of wisdom to save him from all false choices, patience and courage to carry him through all disappointments; that in Thy light he may see light, and in Thy straight path may not stumble; through Him by whom all worlds were made, thy Son Jesus Christ our Lord. *Amen.*

Following the invocation and the singing of "Veni Creator Spiritus," a hymn traditionally sung at Rice academic ceremonies, Dr. Houston introduced Robert L. Clarke, President of the Student Association, who presented the greetings of the student body:

On behalf of the Student Association at Rice University, I welcome you to this inauguration ceremony.

As we are assembled here today to inaugurate the third President of our University, we also commemorate the fiftieth anniversary of the opening of this campus, reflect upon and applaud the work and activities of those who have made it the intellectual and cultural center that it is, and examine its visions for future growth and development.

From its spectacular and carefully planned beginning, this University has undergone a phenomenal expansion. Within the most recent years, we have seen it turn from a predominantly technical institution to a true university with a mutual respect between the sciences and the humanities. This has broadened the opportunity of the students at Rice to obtain an outstanding education and has presented countless new vistas for research and future development.

The activity and the enthusiasm generated in the Rice community has transcended the more permanent aspects of the University—its faculty and curriculum. The past decade has seen the appearance of an entirely new type of student at Rice, and with this student has come a totally different attitude and outlook. Because of the greater encouragement and inspiration from parents and teachers, each year's entering class of Freshmen surpasses its predecessors in preparation and enthusiasm for achieving academic excellence. While appreciating the rigor that has characterized education at Rice and brought it to its present esteemed position, this new student realizes that depth of education without breadth can prove to be stifling.

Concern for personal responsibility in the progress of the University has prompted more creative participation in student government, and we can look forward with eager expectation to the continued growth and influence of the residential college system as well as contributions of responsible student leadership on a University-wide level.

On this occasion, the students view the future of Rice University under the leadership of Dr. Kenneth Sanborn Pitzer with a great deal of anticipation and enthusiasm. Since assuming the duties of the presidency last year, Dr. Pitzer has won the admiration and respect of this student body for his willingness to deal with their interests and affairs. Student-administration co-operation is at a high point, and I am confident that this climate of co-operation will continue.

As we participate in this inauguration ceremony and begin another fifty years of Rice history, may I say, Dr. Pitzer, that the complete confidence of the students is with you. Your efforts during the past year have indi-

cated that the future will be bright indeed, and we stand ready to support your goals and desires in every way possible.

Willoughby C. Williams, President of the Association of Rice Alumni, was then introduced by Dr. Houston and offered the greetings of the alumni:

It is a great pleasure, Dr. Pitzer, to have this honor as President of the Association of Rice Alumni to bring you today our greetings, our best wishes, and our pledge of loyalty and assistance in working with you toward the further development of our great University.

We have already enjoyed the privilege of working with you for almost a year and have prospered from this association. We have found you to be a great man in every way, a worthy successor to those great men who have preceded you in this office. We admire you for the manner in which you have accepted and are discharging the responsibilities of chief administrative officer of this vast corporate entity and for your already demonstrated superior ability to direct, as a team, the many groups which constitute this University. We respect you for your outstanding academic record and are proud that Rice University may now claim you. We are pleased with the way you and your lovely and gracious wife, as well as others of your family, have already become most welcome members of this community in which Rice grows and prospers.

We are certain that Rice University, under your leadership and direction, will continue to increase in stature and in its contributions to knowledge, and thereby in its aid to mankind. We wish you to know, before this great body here assembled, that the more than 22,000 alumni of this University are united in our desire to assist you however we can to increase further the esteem in which Rice University is held among scholars today.

Thank you for the privilege of calling you "Our President"; and God bless you in this undertaking.

Referring to the Faculty as the "heart of the University," Dr. Houston then introduced Professor Frank E. Vandiver of the Department of History and Political Science, who gave the greetings of the Rice Faculty:

It is my happy privilege to bring you the greetings and hearty good wishes of the Faculty of Rice University. In most cases, it would be foolhardy for one professor to speak for another—faculties are notorious for the absence of consensus of opinion! On this good occasion, however, a rare unanimity of sentiment has been achieved.

All the Faculty are pleased that our Trustees found you, Dr. Pitzer, gratified that you did us the honor to come, and impressed with your plans for the future of Rice.

Our University's progress under the enlightened administrations of Dr. Edgar Odell Lovett and Dr. William V. Houston has been steady and significant. Rice has always manned the battlements in maintaining uncom-

promising standards of inquiry and profession. But like all American universities, Rice now faces stern educational tests. All of us will feel the pressures of money—faculties are especially sensitive to this pressure—of size, of the urgent prominence of science and technology.

Dr. Pitzer, the Faculty will gladly follow your lead in meeting these challenges with confidence in your magnetism, in your wisdom, and in your love of liberal learning.

Upon the conclusion of Professor Vandiver's remarks, Dr. Houston introduced the principal speaker for the occasion:

It has seemed fitting to have the tribulations and the joys, the frustrations and the opportunities, of the presidential office made clear to the new incumbent by an old hand. Wartime director of a Navy laboratory, member of the Atomic Energy Commission, and first administrator of the National Aeronautics and Space Administration, our speaker looks even more anxiously than the rest of us do at the space capsules soaring overhead, for the men inside are his men. May I present an old and good friend, President of the Case Institute of Technology, Dr. T. Keith Glennan.

Dr. Glennan spoke on the subject, "The University in a World of Accelerating Change." The text of his address is given below:

To participate in a ceremony celebrating the inauguration of a new leader of a distinguished institution of higher learning is always a great privilege. I acknowledge, with humility, the high honor that is mine today to welcome into the ranks of those who bear the burdens and share the rewards of university leadership your new President, Dr. Kenneth S. Pitzer. I do this on behalf of his many friends, colleagues, and admirers throughout the academic and governmental communities to which he has given so much of himself over the years. And I have great pleasure in bringing to him and to Rice University the official greetings and best wishes of my own institution—Case Institute of Technology.

I have personal ties and associations which make this occasion a rewarding one for me. The war years provided the opportunity of knowing your former President, Dr. William Houston. His effective contributions in the field of undersea warfare will not soon be forgotten. Our friendship has continued over the years, and my admiration for his scholarly leadership and his devotion to teaching and research has grown with time. Mr. George Brown, Chairman of your Trustees, is a friend to whom I looked for advice and counsel in my years of service in Washington. Your newly appointed Dean of Engineering took all his degrees at Case Institute and served on our faculty before moving to Rice some years ago.

My association with President Pitzer dates back some twelve years to the time when we worked together in Washington with the Atomic Energy Commission. His adherence to the highest standards of quality in all his activities, his devotion to the field of higher education, and his willingness to assume the responsibility of leadership in educational and gov-

ernmental affairs have marked him as a good citizen in the best sense of that term. I congratulate Rice University on having been able to convince him that his talents and energies were needed to continue the development of this great institution.

President Pitzer has come to you at an exciting time. This period in our history might well be called the Age of Accelerating Change, but even these words are inadequate to describe the reality. In science and technology, discovery is explosive, and the emerging view of life, energy, and matter is revolutionary. In a few brief years the vacuum tube has given way to the solid-state device, propulsion has moved from the piston to the jet to the rocket to the ion engine, and atomic power continues to give promise of effective competition with conventional power generation. In exploration, we have penetrated the last frontiers of the earth and now are pushing out into realms once reserved for the astronomer.

In the political realm, the nations of the earth have come to a crossroads: the choice between limitless progress and limitless disaster. Before the years of this century are done, humanity must choose understanding, co-operation, and human as well as material advancement, or disunity, suspicion, hatred, and ultimate destruction. For the first time in history, there seems to be no middle road, no compromise.

For the educator this is the supreme challenge. We must find ways to prepare our students not only for adequacy but for excellence, in a future whose outlines we can foresee only dimly. In the closing decades of this twentieth century, this will be the educational imperative.

Dr. Pitzer, you have your work cut out for you!

When Rice was founded fifty years ago, this nation was also facing a period of unprecedented change. The year 1912 was a time of exploration—the ill-fated Robert F. Scott expedition, in which he and four companions reached the South Pole but died on the return journey. It was a year of political upheaval—war in the Balkans, establishment of the Chinese Republic, defeat of Theodore Roosevelt by Woodrow Wilson. It was a year of catastrophe exceeding our modern air disasters—the sinking of the liner *Titanic*, with the loss of over 1,500 lives. It was a year of technological change—the development of the cracking process for crude petroleum which cleared the way for rapid growth of the internal combustion engine —and of Texas.

But more important than any of these specifics was the general trend of the times. While most men were preoccupied with getting and spending, science had already quietly laid the groundwork for the development of modern physics, and inventors and engineers were opening the way for the employment of electric power, mass production, and mass transportation and for spectacular advances in communications. The doctrine of laissez faire was under serious attack, and, in retrospect, we can see that the day of enlightened capitalism was dawning. It was an exciting time—a yeasty, expansive time—and what was needed was direction, leadership, and a fuller development of the human potential.

What a time for the founding of a new institution of higher learning!

And the size and standing of your institution today is proof simple that faculty, adminstration, and backers of Rice have done their work well. You have contributed to the expansion of knowledge, skills, and inspiration that has made this past half-century the most remarkable half-century in the history of the world.

Today, as Dr. Pitzer officially takes over his new duties, we stand on the threshold of a new and still more remarkable era of challenge and change. We have cut our ties with the past and set out on an extraordinary journey into the unknown.

Let me repeat: Change—new knowledge, new methods, new machines, new productivity, new wealth, new weapons, new and challenging and sometimes terrifying problems that must be solved under the threat of the cold war—this is the legacy we are bequeathing our children. Now we must prepare them to make the best and the most of it. Every adult in society must share it, but I believe the responsibility falls heaviest on the shoulders of educators and those who support them. In the closing decades of this century the teacher and the educational administrator must be untiring in their efforts to improve the educational process, unremitting in their vigilance to adjust it to the needs of the times.

The headlines will go to the politician, the statesman, the astronaut, but —as they would be the first to admit—these men will owe much of their success to the scientists, engineers, managers, and skilled workers on whose shoulders they stand. And the stature and strength of these men, in turn, will depend in large part on the success of our schools—particularly our colleges and universities—in developing to the full their creative potential.

Let us review briefly our present condition. What are the forces that are shaping our future? What are the urgencies that press upon us? And what should be the role of education?

For all the vast energies at work in the world today, it seems to me that the forces of change can be categorized rather simply. *First,* I will list science, and the technology which derives from its discoveries; *second,* government: the agency to which we have delegated the responsibility for beating out policies and action plans believed to be in the best interests of the individual and the body politic; *third,* industry: the co-operative effort to harness ideas, men, materials, machines, and money for the purposes of production; *fourth,* in a significantly different category—one which gives life and meaning to those forces I have thus far enumerated—is man himself; and *fifth,* education: the organized endeavor through which men increase their store of knowledge, broaden and deepen their understanding, and give each succeeding generation the benefit of the accumulated knowledge and wisdom of the race.

I will not treat education as a separate force, for it relates to everything that is man's. Instead, I will attempt to show its bearing on each of the other forces in turn.

In considering science and technology as a unity comprising one of the great driving forces in our society, we find ourselves confronted by the only one of the forces which is truly revolutionary. An acknowledged

discipline three centuries ago, science and its handmaiden, technology, have produced more change in man's way of life in the last hundred years than he has encountered in all his previous history.

I am sure that the scientists in the audience would prefer to hear me discuss science and technology as separate entities, but my reference point here is not individual motivation but social change, and, in this framework, technology is the bridge that brings science to bear upon the practical problems of society.

What is science? Each man will have his own definition, but, to me, science, first, is an attitude of curiosity arising from a deep desire to know, to understand; second, it is a discipline, a seeking of order. The scientist observes phenomena, advances hypotheses, seeks to prove or disprove hypotheses by experimentation. The unknown is his challenge. Utility may be of little importance to him; certainly, he cannot be bound by it. Knowledge is his goal.

To the layman in our society, however, science has an enormous utility. Regardless of how the scientist thinks of his work, the layman sees in it a new and wondrous method for probing the unknown and finding useful knowledge about nature. What he sees, of course, is the technology which the engineer has built upon the scientist's findings.

The idea may be anathema to some scientists, but it is the finding of useful knowledge which insures the continuance of science as a vital social activity. It is precisely here that education can exert its most constructive influence. By creating an interdisciplinary environment, where scientists and engineers can work together on problems of mutual interest, we can protect the scientist's right to engage in basic research and, at the same time, shorten the interval between the discovery of new knowledge and its application for the good of man. The pressure of scientific and technological change upon society, however, might be explosive and destructive if society had not restrained itself by the binding forces of law and order which a democracy generates.

But in its most recently apparent role, government is more than a restraint. Social and economic pressures constantly change its configurations; it in turn forces corresponding changes upon the direction of science and technology. In this era of the atom and of space, of new emphasis on the sciences of man, government provides initiative as well as control.

Increasingly, by the very nature of our society, government is and will continue to be involved in almost everything we do as groups of individuals banded together for corporate or other purposes. Increasingly, as more and more billions are channeled into defense, the atomic energy program, and the space effort, government initiative and government control will be felt in the economy.

We must, however, be eternally vigilant to see that governmental efficiency is maintained and increased; that individual and group freedoms are protected; that those special freedoms inherent in our competitive-enterprise system—the freedom to win or lose—are strengthened; that gov-

ernmental goals are in tune with the needs of the times; and that the means are provided for the achievement of these goals.

In each of these areas, education can serve the nation well. By providing trained professional manpower of high quality—scientists, engineers, economists, political scientists, lawyers, managers, and the like—we can help to increase the efficiency and effectiveness of government. By building bastions of strength in the humanities and social sciences, we can keep the freedoms we cherish fresh in the minds of the electorate.

By serving as a common meeting ground for all the professions and disciplines, we can aid in continually adjusting new means to new needs and establishing goals that are meaningful. And, finally, by seeking a proper balance between private and governmental research, we can do more to provide the tools and weapons needed to achieve our national goals.

Turning now to modern industry, with all its problems and complexities, it is difficult to see it simply, yet the simplicity is there. Blast furnaces, production lines, power grids stretching across the continent, mechanized farms, green and fruitful in the sun—in all these and in all other manifestations of industry we find these common elements: men, ideas, materials, tools, power, and skills, all uniting to create a barrier against the threats and discomforts of nature.

In this, as in all other activities of man, our educational community has opportunities and obligations. We relate to each category of the industrial simplicity: to the man, the idea, the material, the tool, the power source, and the skill. Furthermore, we relate with a peculiar urgency to the intellectual discipline which we have invented to explain the relationships between the categories: the discipline of economics.

The development of economic understanding has lagged behind the development of industrial productivity. Things are often easier to deal with than ideas, and the effective structuring of economics has had to stand, until recently, on a foundation of insufficient data. We had had neither the means to gather enough facts nor the means to interpret them fast enough to make them of timely value.

Today, however, with improved methods of communication, and the fantastic new tool, the electronic computer, we can gather data rapidly, and interpret them even faster. We still have a long way to go, but we have a better chance, now, of making economics a more perfect tool in the service of man.

The central factor in all these endeavors, however, is man himself. His is the motivation behind these otherwise inanimate forces. To them he gives life and meaning, whether for good or for evil. He is the prime force behind the accelerating pace of change. His creative potential—the power of his mind—is virtually limitless. Motivate him, inspire him, lead him, develop him, and he will produce wonders. The question is: How can we develop that potential?

In the semiraw state in which he comes to the university, a man is a very misleading phenomenon. He is immature, yet he is a citizen, except for

voting, and he must abide by the law. He is, in many ways, grown up and independent, yet throughout his school experience he is supported, cared for, and dependent. He is simultaneously an equal and an inferior, a leader and a subordinate, a man and a boy.

He is a learner. He learns by listening, seeing, feeling, imitating. He reads. He experiments. He daydreams. He talks, writes, draws, builds. If you stop him, the learning process will be interrupted.

He studies and plays and lives under strong mental and emotional pressures which push him in ways that adults find it difficult to understand. Left to his own devices, he is likely to defeat himself and be wasted to society or become an actual charge upon it.

This is the raw ore. But what an exciting potential when this raw ore can be refined! One man from this year's Freshman class may in his lifetime find the road to world peace. Another may find ways to harness atomic fusion to peaceful uses, and still another may discover the means to increase man's years of activity and usefulness.

When I look out on the contemporary scene and contemplate the task that lies before us, I feel a sympathy for those who are fearful of the future. It is true that man's increased knowledge of the laws of nature, and his application of that knowledge, have greatly complicated our human and societal relationships. It is true that the rate of change is accelerating and is likely to continue to accelerate. It is true that man is essentially a selfish, self-centered creature and must be taught the benefits of co-operation. And it is true that the average man, bewildered by the pace of change, is likely to say, "The scientists have produced this confusion—let them solve it."

But I am an optimist. I believe that we have a future and that it will be great beyond all our imaginings. I believe that out of today's complexity of discovery will come tomorrow's understanding and a progressive simplification of man's view of nature. I believe that mankind will be able to adapt to the pace of change and learn to direct the forces of change in an increasingly beneficial manner. I believe that man's very selfishness, tempered by wisdom, will lead him to choose understanding, co-operation, and human and material advancement over disunity, suspicion, hatred, and ultimate destruction. I believe that in education we have a force subtle enough to help him make this choice and powerful enough to help him implement it once it is made. I believe that educators at every level of instruction are aware of this unprecedented need and are beginning to take steps to satisfy it. From kindergarten to graduate school, new methods, improved curricula, and a more viable educational philosophy are emerging. Much more—much, much more—needs to be done, but in many excellent institutions at all levels there is a ferment of improvement and growth.

In our schools of science and engineering, there are three emerging trends. One is toward a greater emphasis on mathematics and basic science. Another is toward a greater emphasis on interdisciplinary research. The third is a growing emphasis on the humanities and social science, aimed

at giving the scientist and the engineer a broader understanding of the human involvement in the applications and use of the technologies with which he is primarily concerned.

In some of our liberal arts schools there is a trend toward giving students a better grasp of the powers and limitations of science and technology. The trend must be encouraged; otherwise, C. P. Snow's "Two Cultures" will continue to move forward with neither fully understanding the other. It must be encouraged, or talented and effective leadership will not be available to point the way to the solutions of the problems that men and nations are certain to face in the foreseeable future.

But let me say again that I am optimistic, and this scene here today strengthens my optimism. Rice University, with strong programs in the liberal arts, the sciences, and engineering, is busily engaged in building understanding and providing leadership to bridge this gap.

I am certain that President Pitzer intends that this will continue to be the role of this University in this era of accelerating change. Building on the foundations of quality and achievement so well laid down by his predecessors over the past fifty years, his is certain to be a crucial task in the days and years ahead. In the name of all who are participants in man's greatest adventure—education—I wish him success and Godspeed.

Following the address by Dr. Glennan, the Rice University Chorus sang "The God Who Gave Us Life."

Upon the completion of this musical number, Dr. Houston, Mr. Brown, and President Pitzer advanced to the rostrum. Dr. Houston presented President Pitzer to Mr. Brown in these words:

Those of you in this community who have watched the growth of Rice, through half a century, through war and depression, and war again; through President Lovett's steadfast devotion to his vision, and the remarkable dedication of the Faculty through the past five decades, you are deeply involved in the future. And you, and I as well, look to the new President with deep hope and full confidence in that future.

And those of you even more closely committed to Rice, you of the Faculty who are devoting your lives to Rice University—you can look forward not only with confidence but with enthusiasm to what is ahead.

Mr. Chairman: may I present to you for inauguration as the third President of William Marsh Rice University, a distinguished scholar, an internationally known chemist, a dedicated public servant with the Office of Scientific Research and Development during the war, and later with the Atomic Energy Commission, brilliant university professor and able dean at the University of California, Dr. Kenneth Sanborn Pitzer.

Mr. Brown acknowledged the introduction and then made the formal installation of President Pitzer in the following manner:

By the authority vested in me as Chairman of the Board of Trustees and Governors of the William Marsh Rice University, I hereby install you

as President of the University and invest you with all the powers and authority pertaining to that office.

And I take this opportunity to express to you, and to all those present, the pleasure I, and all members of the Board, feel at your willingness to assume the responsibilities that will devolve upon you. We look forward to great things for Rice under your guidance. We promise you our fullest encouragement and support, and we look to the future with confidence, that your leadership will continue the efforts of the past fifty years to carry Rice University still further along the road to excellence.

The audience rose and gave the new President a standing ovation as Mr. Brown completed the installation. President Pitzer then responded:

Mr. Brown, Dr. Houston, Dr. Glennan, Members of the Board of Governors, of the Faculty, and of the Student Body, Distinguished Guests, and Representatives from institutions across the globe: It is a great honor and a grave responsibility to accept this position.

I appreciate very deeply the remarks of Mr. Clarke, Mr. Williams, and Dr. Vandiver on behalf of the students, the Alumni, and the Faculty. The alumni and their accomplishments are the real products of a university, while the students and the faculty determine its spirit and quality today and its prospects for the future.

I have known and admired Dr. Houston ever since I had the pleasure of taking his course in mathematical physics at the California Institute of Technology in 1934 and '35. It is a special pleasure to have him preside today and a real honor to succeed him in this position.

It has been a privilege to come to know and to work with the Board of Governors of this University and in particular with Mr. Brown, whose leadership and devotion are indeed outstanding.

It is also a great pleasure to have with us today Dr. Keith Glennan, with whom I have been associated from time to time in the past. His statements with respect to the policies that we shall be following were well taken indeed.

This University is the living monument to the vision and wisdom of William Marsh Rice and to his devotion to the city of Houston, where he made his fortune and where he left his fortune for the benefit of the city and the state. Through the years, many others have shared the vision and devotion of Mr. Rice and have added through their service, or their fortune, or both, to the building of this University. I feel a deep responsibility to William Marsh Rice and to the other devoted men and women who built this University that was long known to you and me as the Rice Institute; I shall do my utmost to forward their aims and objectives as vigorously as possible. In the future this University will require the continued support of the community, both local and national, and we ask your understanding as we interpret the major objectives of the founder in terms of the new conditions of the space age. I am most fortunate to have the guidance of a Board of Governors both bold and wise—with

THE BOARD OF GOVERNORS AND THE FACULTY

OF

WILLIAM MARSH RICE UNIVERSITY

HAVING RESOLVED TO OBSERVE THE FORMAL

INAUGURATION OF

KENNETH SANBORN PITZER

AS THE THIRD PRESIDENT OF THE UNIVERSITY

WITH APPROPRIATE CEREMONIES

AND TO CELEBRATE ITS

SEMICENTENNIAL

WITH A SERIES OF LECTURES

WHICH A COMPANY OF RENOWNED SCHOLARS HAS CONSENTED TO READ

IN THE FUNDAMENTAL SCIENCES IN THE ENGINEERING DISCIPLINES

AND IN THE LIBERAL HUMANITIES

IT THEREFORE BECOMES A PRIVILEGE

MOST RESPECTFULLY TO REQUEST

The University of Paris

TO SEND A REPRESENTATIVE

OF THAT DISTINGUISHED SOCIETY OF SCHOLARS

TO THIS SECOND ACADEMIC FESTIVAL OF

WILLIAM MARSH RICE UNIVERSITY

WEDNESDAY THURSDAY AND FRIDAY

THE TENTH ELEVENTH AND TWELFTH DAYS OF OCTOBER

NINETEEN HUNDRED SIXTY-TWO

The favor of a reply by September First is requested

An Institutional Invitation to the Inauguration of President Pitzer and the Semicentennial Academic Festival

The Board of Governors and the Faculty of

William · Marsh · Rice University

having resolved to observe the formal
Inauguration of

Kenneth Sanborn Pitzer

as the Third President of the University
with appropriate ceremonies
and to celebrate its

Semicentennial

with a series of lectures
which a company of renowned scholars has consented to read
in the Fundamental Sciences, in the Engineering Disciplines
and in the Liberal Humanities
it therefore becomes a privilege to invite

Mr. and Mrs. Brown

to this second academic festival of
William · Marsh · Rice University
Wednesday, Thursday, and Friday
the Tenth, Eleventh, and Twelfth days of October.
Nineteen Hundred Sixty-Two

The favor of a reply by September First is requested

A Personal Invitation to the Inauguration of President Pitzer and the Semicentennial Academic Festival

The American Philosophical Society

Held at Philadelphia

for Promoting Useful Knowledge

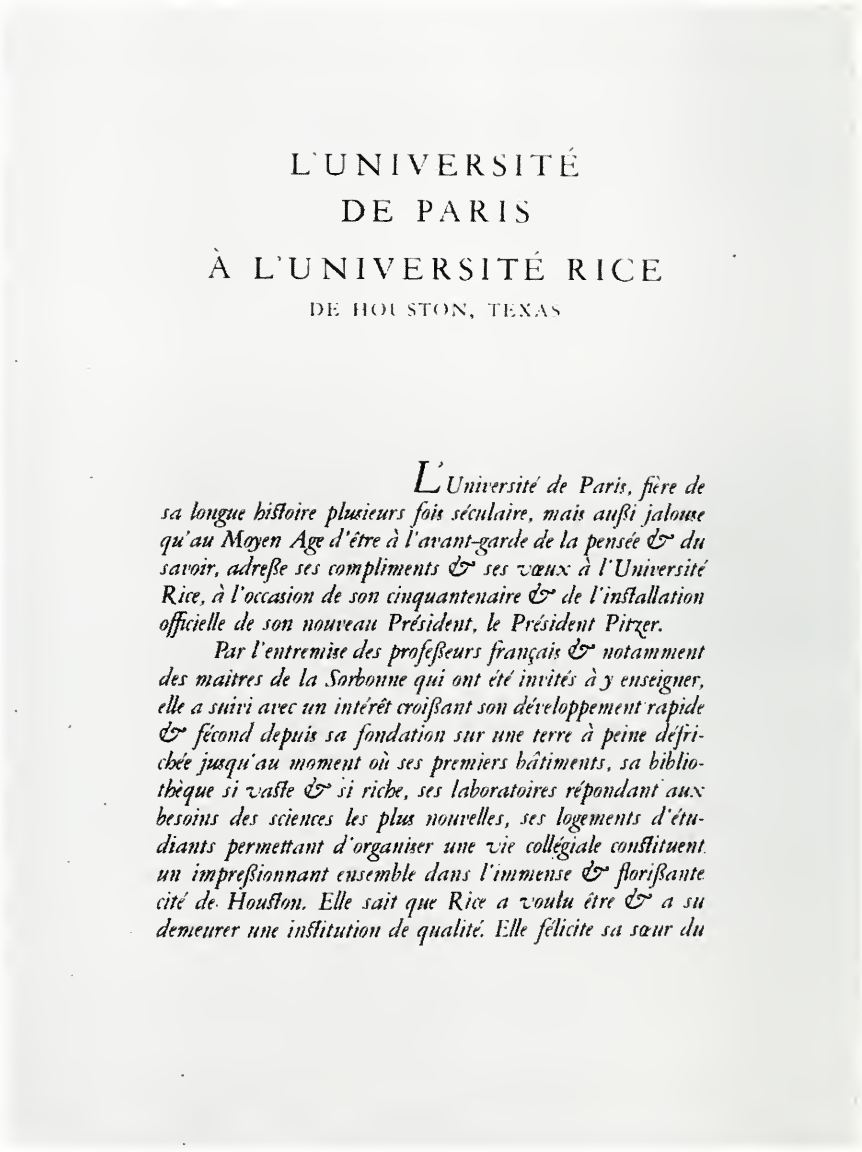
extends to the Board of Governors and the Faculty of

William Marsh Rice University

cordial greetings on the occasion of the University's celebration of fifty years of notable service to its community and to the nation.

The Society takes pride in the fact that Kenneth Sanborn Pitzer, one of its Members, has been called to the presidency of the University in succession to William Vermillion Houston, himself long an honored Member. To Honorary Chancellor Houston, the Society sends felicitations on the University's remarkable growth and ever-increasing contributions, under his leadership, to science and the public welfare; to Kenneth Sanborn Pitzer, as he assumes the presidential chair, its congratulations and high expectations of a successful administration.

Philadelphia, October First,
Nineteen Hundred Sixty-Two



L'UNIVERSITÉ
DE PARIS
À L'UNIVERSITÉ RICE
DE HOUSTON, TEXAS

L'Université de Paris, fière de sa longue hiſtoire pluſieurs fois ſéculaire, mais auſſi jalouſe qu'au Moyen Age d'être à l'avant-garde de la penſée & du ſavoir, adreſſe ſes compliments & ſes vœux à l'Université Rice, à l'occaſion de ſon cinquantenaire & de l'inſtallation officielle de ſon nouveau Préſident, le Préſident Pitzer.

Par l'entremiſe des profeſſeurs français & notamment des maîtres de la Sorbonne qui ont été invités à y enſeigner, elle a ſuivi avec un intérêt croiſſant ſon développement rapide & fécond depuis ſa fondation ſur une terre à peine défrichée juſqu'au moment où ſes premiers bâtiments, ſa bibliothèque ſi vaſte & ſi riche, ſes laboratoires répondant aux beſoins des ſciences les plus nouvelles, ſes logements d'étudiants permettant d'organiſer une vie collégiale conſtituent un impreſſionnant enſemble dans l'immenſe & floriſſante cité de Houſton. Elle ſait que Rice a voulu être & a ſu demeurer une inſtitution de qualité. Elle félicite ſa ſœur du

Greetings from the University of Paris

These greetings were delivered personally to President Pitzer by Professor Louis Landré. The first page is reproduced above.

Texas de l'importance des recherches qui y ont été poursuivies dans le domaine des sciences; elle se réjouit qu'elle n'ait point pour autant négligé d'accorder une place de choix aux humanités.

Plus d'un Français s'est directement intéressé au développement extraordinaire de la riche terre du Texas; la France y délégua il y a plus d'un siècle un ambassadeur extraordinaire. Comment son Université la plus importante ne se réjouirait-elle pas d'y voir se développer & fleurir des institutions d'enseignement & de recherche pleines d'allant? Comment ne saluerait-elle pas les progrès de l'Université Rice qui s'efforce sans arrêt de répondre toujours mieux aux besoins actuels des techniques, de la science & de la culture.

En ce jour solennel, l'Université de Paris adresse à Rice ses vœux les plus cordiaux, les plus chaleureux. Elle lui souhaite une vie longue & prospère, afin que, fidèle au noble idéal de son généreux fondateur, de ses administrateurs vigilants, de ses maîtres compétents & dévoués, elle continue à servir les progrès des sciences & des humanités, œuvrant ainsi avec toutes les Universités du monde au maintien des valeurs spirituelles & morales, dont elles ont mission, même aux jours les plus sombres, d'assurer la défense & la garde.

Paris, en Sorbonne, le 10 octobre 1962.

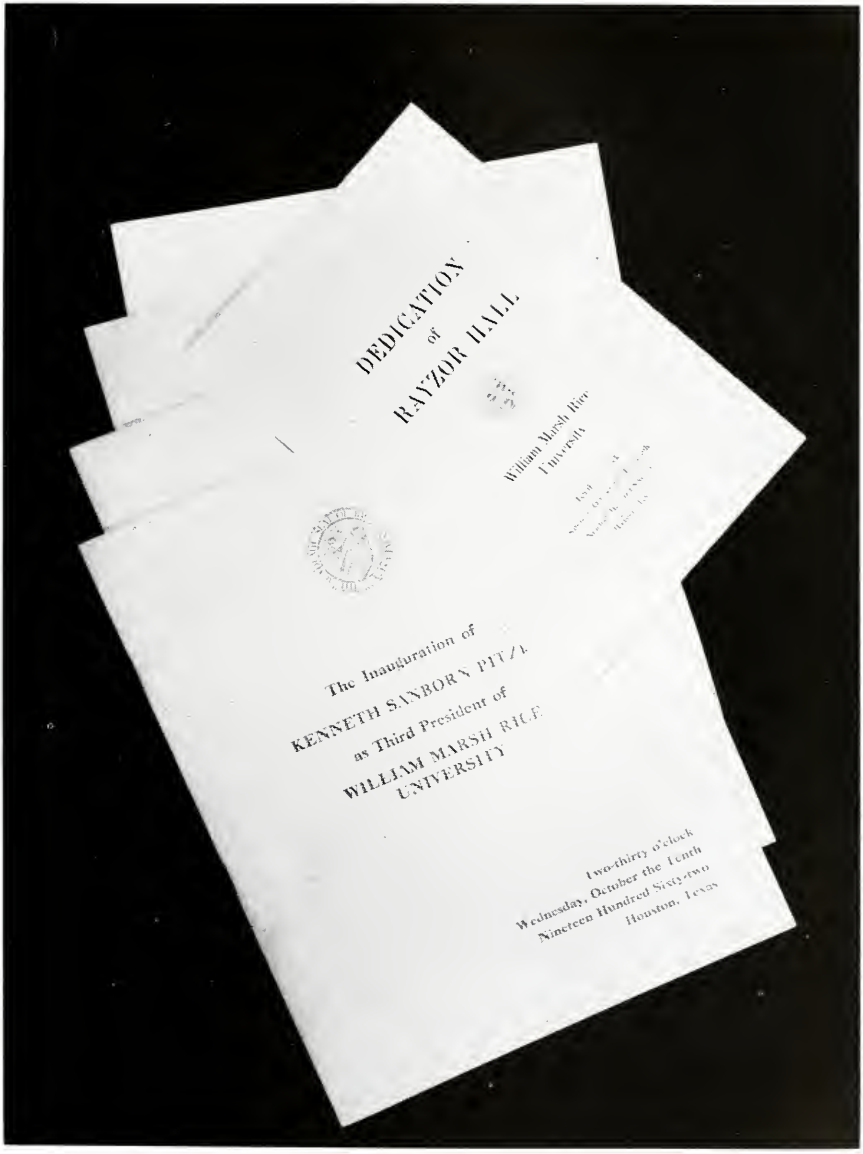
LE RECTEUR,
Président du Conseil de l'Université de Paris,

Greetings from the University of Paris

The continuation of the message on page three of the formal greetings is reproduced above.

An Unusual Greeting from Tunghai University

The greetings from Tunghai University came in the form of a blue silk scroll with gold lettering, measuring $26\frac{1}{2}$ by 58 inches.

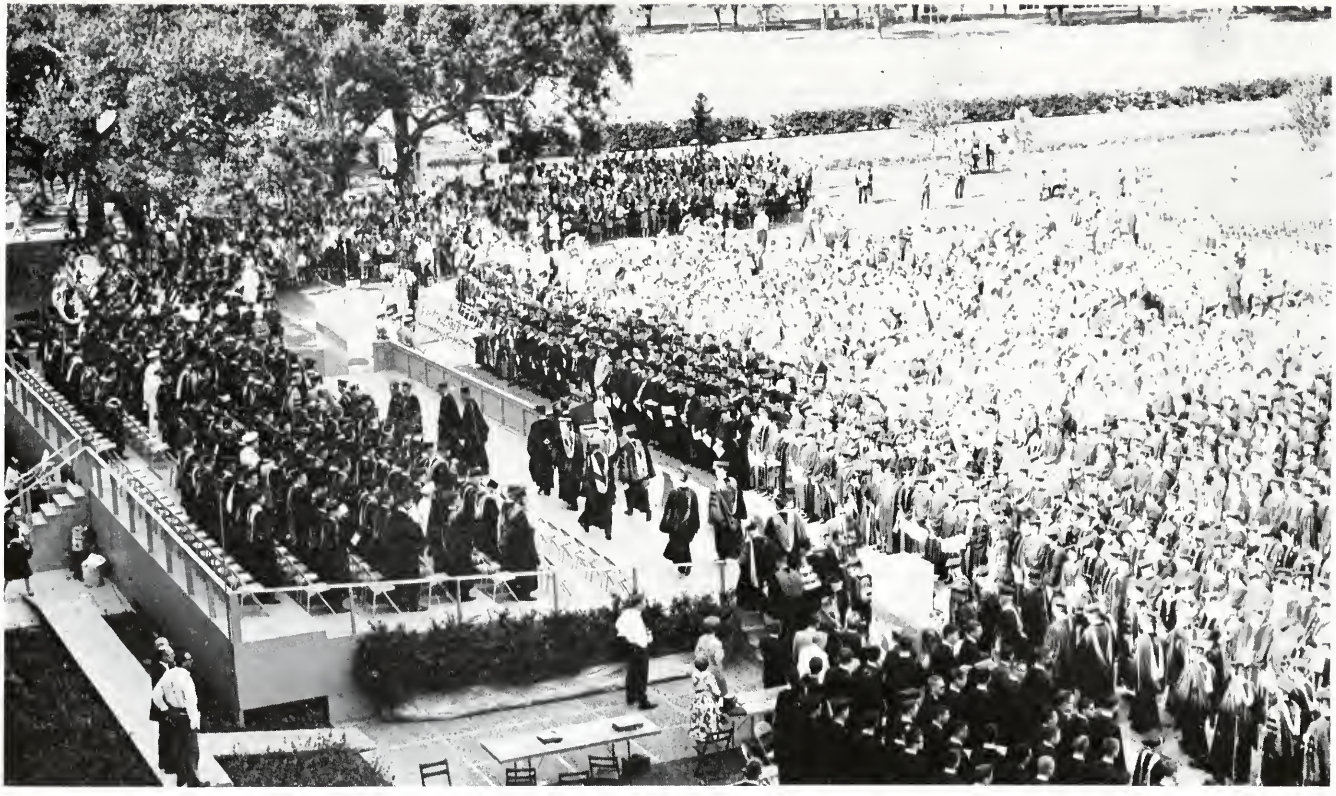


Programs for the Inauguration and the Semicentennial Events

The front covers of these programs have been used as the half-title pages of the present volume, except the one for the Rayzor Hall dedication.

THE ACADEMIC PROCESSION

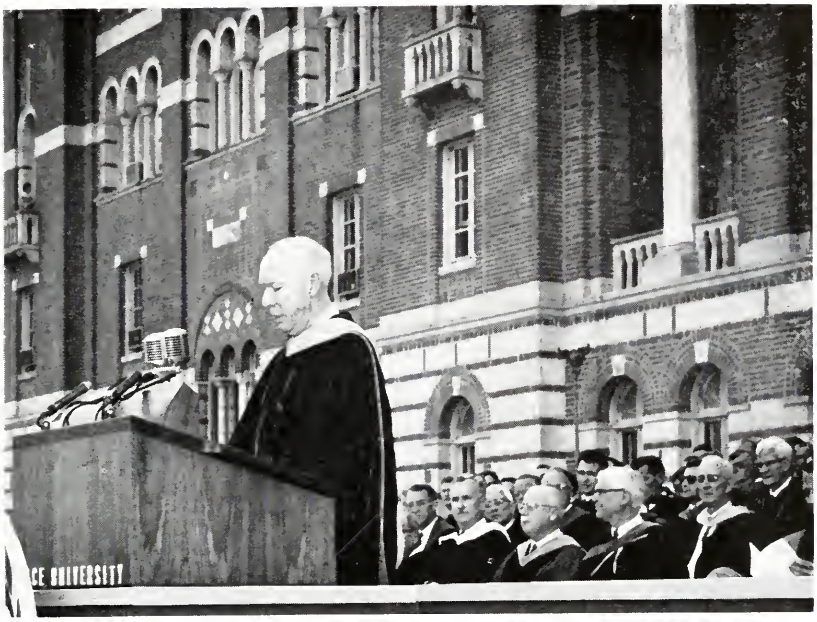
The University Marshals are shown leading the Senior Class (*on the left*) and the Delegates of Learned and Professional Societies and Other Institutions (*on the right*) from the Fondren Library cloisters.



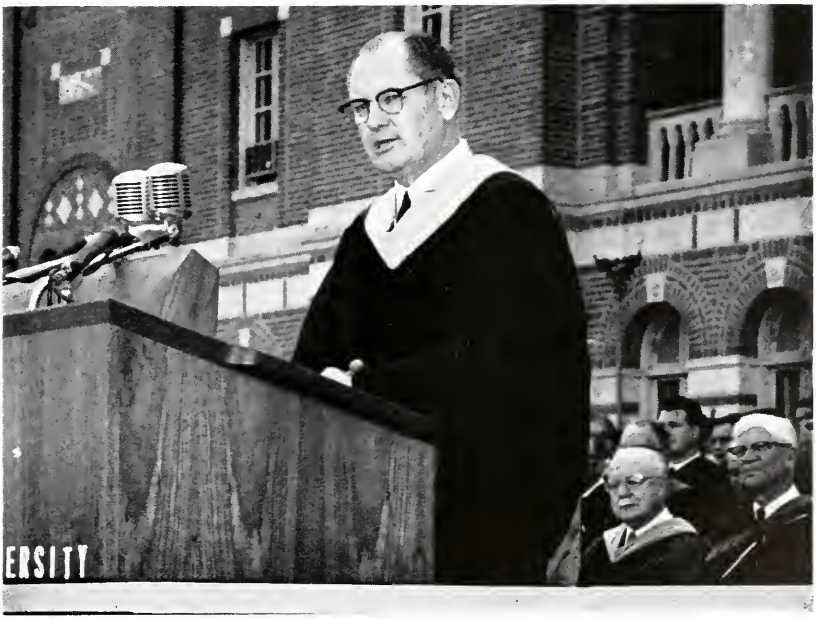
The Academic Procession

The Faculty marches on the Speakers' Platform for the inaugural ceremonies. The delegates stand in the front rows facing the platform, and the Senior Class is back of the delegates to the right. The Rice Chorus is at the lower right.

The Speakers' Platform at the Inaugural Ceremonies
The delegates are in the foreground of the picture.



Honorary Chancellor Houston Introduces a Speaker



President T. Keith Glennan Delivering Inaugural Address

Chairman of the Board of Trustees Brown Installs President Pitzer

President Pitzer and the Chief Marshal Lead
Recessional at Inaugural Ceremonies

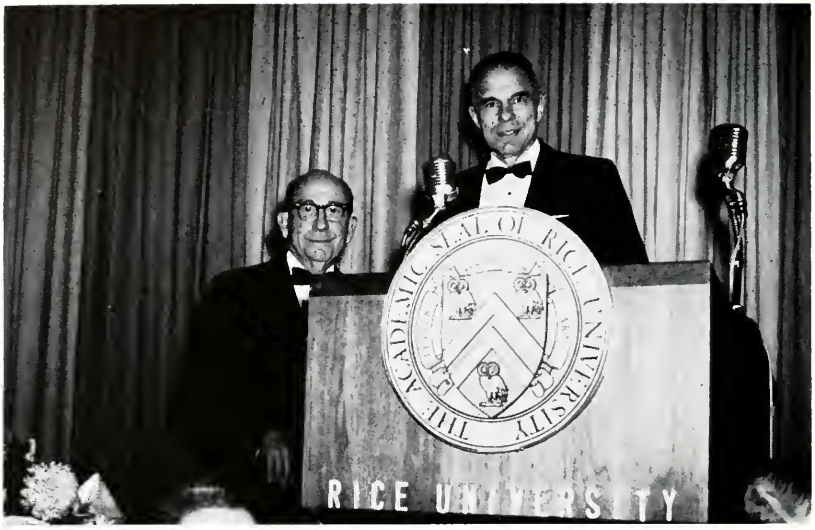
President and Mrs. Pitzer Extend Informal Greetings to Guests at Inaugural Dinner

Facing the camera from left to right are Mrs. Pitzer, Chancellor H. H. Ransom of the University of Texas, President Pitzer, Mrs. Philip G. Hoffman, wife of the President of the University of Houston, and Mrs. William V. Houston, wife of Honorary Chancellor Houston of Rice University.

Chancellor Croneis Presides at Inaugural Dinner

University of Texas Chancellor Ransom
Speaks at Inaugural Dinner

President Pitzer is in background at left.



Rice Associates Dinner

Dr. Glenn T. Seaborg, Chairman of the United States Atomic Energy Commission and principal speaker at the Rice University Associates Dinner, is shown with Mr. Harmon Whittington, member of the Rice Board of Governors who presided at the dinner.

Alumni Homecoming Dinner

The Reverend William G. Pollard, Executive Director of the Oak Ridge Institute of Nuclear Studies and principal speaker at the Alumni Homecoming Dinner, is shown with Toastmaster Cornelius Ryan on the right and President Willoughby Williams on the left.

understanding of academic affairs as well as of the community and the nation.

It has been a great inspiration to me to study the history of this University and, in particular, to note how carefully President Lovett plotted its initial course and how clearly he stated its objectives. In Dr. Lovett's words:

"The new institution thus aspires to university standing of the highest grade, and would achieve its earliest claims to this distinction in those regions of inquiry and investigation where the methods of modern science are more directly applicable. For the present it is proposed to assign no upper limit to its educational endeavor, and to place the lower limit no lower than the standard entrance requirements of the more conservative universities of the country. Moreover, all courses of instruction and investigation, graduate and undergraduate, will be open both to young men and to young women, and for the present, without tuition and without fees."

And further,

". . . if the university, though on private foundation, is in its first days what Bryce calls a municipal university, Haldane a civic university, Dabney an urban university, in its future days it is to be more than a university of Houston—it is to be a university of Texas, a university of the South, and later, let us hope, in reality as in aspiration, one among the national institutions, reflecting the national mind, one among the universities of the nations, fostering the international mind and spirit in cosmopolitan ways such as the mediaeval universities enjoyed before the death of universal language and the divisions in a universal Church."

Rice University has moved a remarkable distance along this path under the able leadership of Dr. Lovett and Dr. Houston. The willingness of our distinguished guest speakers of the next two days to come from around the world in order to share their knowledge and wisdom while celebrating Rice's Semicentennial certifies to a degree of international standing.

But the building of a great university is not a task to be completed in fifty years; furthermore, the maintenance of true excellence is a never ending task. And we recognize that, however distinguished certain of our programs may now be, major improvements are required in many areas if Rice is to fulfill the goal of its founders.

Plans have already been made for the next phase of development covering three to five years. Emphasis will be placed on strengthening those graduate programs to which we are already committed, so that Rice may contribute a much larger number of scholars and scientists, particularly at the Ph.D. level, to help overcome the national and regional shortage of teachers and research investigators. We expect to increase the enrollment of graduate students and to improve our programs in a manner to strengthen the experience of the student in scholarship and research, while also expediting his progress toward the Ph.D. degree.

It is the University's obligation both to conserve the treasure comprising the intellectual experience of all humankind and to promote its growth

and effective use. One major function, therefore, is the transmission of knowledge to the next generation. But it is also the function of the true university to increase this treasure of knowledge in three ways: first, through artistic creation and laboratory experiment to explore new phenomena and give birth to new ideas and new understanding; second, to be ever vigilant in checking presently accepted principles, which, while seldom wholly wrong, are equally rarely completely correct, and to develop more nearly true explanations; and, third, to interpret general principles in such a manner that they may be usefully applied to the solution of the problems of individual citizens, of industry, and of government at all levels from the city to the nation.

Rice will strive for nothing less than the best in each of these functions of the university. We must have teaching of the highest quality. Among our explorers of the unknown will be many whose discoveries are recognized around the world. Scholars of international distinction must be accessible to the most able advanced students from any state or nation, and I know that the citizens of Houston join the University in welcoming students from other lands. In order to meet its responsibilities to Houston, to Texas, and to our nation, Rice must become "one among the universities of the nations."

A university is a community of scholars, young and old, novices and veterans. We hope the student members of this community will gain as quickly as possible the spirit of creative work, of investigation and interpretation. Also, we realize that the university does not pretend to constitute a complete environment for its students. The influence of the home is still important, and, for those away from home, the homes of their friends substitute in part; the churches of this community are an important part of our student environment; and the museums, the symphony, the opera, the theater, the newspapers, indeed, many facets of Houston are important to the University and its students and faculty.

One of the honored words in the national tradition is "freedom," and it is a keystone of university tradition too. In words of President Lovett, to which I fully subscribe, Rice is

". . . a university whose greatest strength likewise is in its freedom: in the freedom of its faculties of science, humanity, and technology, to teach and to search—each man a freeman to teach the truth as he finds it, each man a freeman to seek the truth wherever truth may lead: in the freedom to serve the State because entangled in no way with the government of the State, and the freedom to serve the Church because vexed by none of the sectarian differences that disturb the heart of the Church.

"While we rejoice in our freedom from Church or State control, we rejoice none the less in the work of these fundamental and indispensable agencies of civilization, for we can conceive of no university in whose life there does not appear the energy and enthusiasm, the affection and the calm, that we associate in one way or another with reverence, patriotism, politics, and religion."

Ladies and Gentlemen, I am most deeply grateful for the honor you do

this University and my Office on this occasion, and I thank you for your warm personal greetings. And, finally, I renew with you our mutual devotion to the discovery of the truth and to the teaching of the truth. Our enthusiasm is well expressed by the Greek inscription behind me on Lovett Hall, which is translated, "Rather," said Democritus, "would I discover the cause of one fact than become King of the Persians"; and our faith by the immortal words, "the truth shall make you free."

At the conclusion of President Pitzer's remarks, the audience stood and sang the Rice alma mater, "For Rice's Honor." The Reverend Pollard then pronounced the benediction:

> Go forth from here in faith and peace; be of good courage, hold fast to that which is true and good, render to no man evil for evil, strengthen the fainthearted, support the weak, help the afflicted, honor all men. And the blessing of God Almighty, the Father, the Son, and the Holy Spirit be upon you and remain with you forever. *Amen.*

The Rice Band played Gounod's "Marche Pontificiale" as President Pitzer and the Chief Marshal led the recessional march.

The Inaugural Reception

More than two thousand persons attended President and Mrs. Pitzer's reception for the Faculty, delegates, distinguished guests, and other friends of the University in the Grand Ballroom of the Rice Memorial Center at 4:30 P.M. Joining President and Mrs. Pitzer in the receiving line were President and Mrs. T. Keith Glennan, Chancellor and Mrs. William V. Houston, and Chancellor and Mrs. Carey Croneis.

Arrangements for the reception were made by Mrs. John G. Holland, Dean Alma L. Lowe, and Mrs. G. H. Richter.

THE INAUGURAL DINNER

in honor of

PRESIDENT AND MRS. KENNETH SANBORN PITZER

Seven-thirty o'clock
Wednesday, October the Tenth
Nineteen Hundred Sixty-two
Crystal Ballroom, Rice Hotel
Houston, Texas

The Inaugural Dinner

A TOTAL OF 1,220 guests attended the inaugural dinner honoring President and Mrs. Kenneth Sanborn Pitzer, held in the Crystal Ballroom of the Rice Hotel at 7:30 P.M., October 10, 1962. Chancellor Carey Croneis presided. The invocation was given by the Reverend John F. Murphy, President of St. Thomas University:

O, All Wise and Almighty God, Bless Kenneth Pitzer as he assumes trusteeship of William Marsh Rice University.

Bless, too, his wife and family—partners and inspiration in his academic career.

Guide him amid the proliferation of new knowledge and unprecedented challenges, that he may be prudent.

Sustain him with a consoling awareness of the greatness of his tasks.

Preserve in him a saving sense of humor against those who will contest whatever he does; help him to be patient alike with the rebel and the conformist, who are equally at odds and at home in every academic family.

Help him to see always that to direct the eternal quest of youth toward the many-splendored vision of truth, human and divine, far outweighs the heartaches and frustrations that leadership must endure.

In the name of the Father and the Son and the Holy Ghost. *Amen.*

Following the meal, Chancellor Croneis introduced the distinguished guests at the head table. He then made the following opening remarks:

Ladies and Gentlemen: Many months ago, when the Rice University Semicentennial celebration was little more than a nebulous dream, those of us charged with the responsibility for the planning and execution of the various projected events came to the conclusion that, if the dream were ever to become a reality, we would have to determine, and state, our basic purposes. After mature deliberation it was decided that the purposes and objectives of the Semicentennial could be expressed in three short paragraphs. The first purpose was, and is: "*To commemorate the first fifty years of Rice University; and to signalize the fulfillment of the dreams of William Marsh Rice, the founder—in which dreams there was envisaged*

the creation and development in Houston of an outstanding American institution for the advancement of letters, science and art; and, further, to re-create the international academic enthusiasm engendered by the significant ceremonies held at the opening of the University in the Fall of 1912."

It has not been easy for Rice University, despite all the work and thoughtful effort which have gone into the planning for the 1962 Academic Festival, to equal the "academic enthusiasm engendered by the significant ceremonies" held exactly fifty years ago today. But we may seriously doubt that the guests of 1912 received as warm—indeed, hot—a welcome as the delegates and friends of 1962 assembled here tonight.

In 1912, when South Main Street was unpaved and much of the Rice campus was swampy, or poorly drained, and when today's beautiful oaks were only saplings, the gathering of approximately 175 guests from the major universities and learned societies throughout the world represented an event essentially unparalleled in the history of the development of academic institutions in the Americas. The 1962 Festival, however, has brought more than twice as many distinguished visitors to the Rice campus, among them well over fifty heads of colleges, universities, medical schools, and learned societies. The University is sincerely grateful for this tacit recognition of the stature of the institution, and for the homage the delegates and guests are directly and indirectly paying to the founder, William Marsh Rice, to the late President, Edgar Odell Lovett, to past President—now Honorary Chancellor—W. V. Houston, to the Board of Governors and the Faculty, and, especially, to President Kenneth Sanborn Pitzer.

The second objective of the Rice Semicentennial was stated as follows: "*To present to the world at large, as well as to scholars of every nation, plans and projects whose fruition, during the next half-century, will not only make secure the place of Rice University in the forefront of the world's distinguished institutions of higher education, but also further increase the University's contributions to public enrichment through private endowment.*"

We are Texan enough to believe that Rice's "contributions to public enrichment through private endowment" loom larger every day and, fortunately, become more and more visible to the general public, which is indeed enriched through such Houston community dividends as the Manned Spacecraft Center, in whose move to the Clear Lake site Rice played something more than a minor role.

The third purpose of the Rice fiftieth anniversary program was phrased as follows: "*To inspire among the friends of Rice, as well as in its Trustees, administration, faculty, students and alumni, a renewed awareness of the importance of both the research for truth and the dissemination of knowledge as exemplified by the record of the University during its first 50 years—and, further, to make plain to all citizens the rich opportunities which in the next half-century will present themselves for contributing to*

the progress and welfare of mankind through supporting an institution pledged to the quest for excellence in all its activities."

Happily, in a troubled world, there is a "renewed awareness" that the support of research, scholarship, and culture generally, and, specifically of any "institution pledged to the quest for excellence" does pay handsome nonmonetary as well as financial dividends to all the people of any community and, less selfishly considered, to all mankind. In a realistic sense, herein lies the justification for, and the importance of, the ceremonies surrounding the inauguration of a new educational leader—President Kenneth S. Pitzer—and the Rice Academic Festival.

Following these remarks by Chancellor Croneis, the Honorable Lewis Cutrer, Mayor of Houston, offered greetings and felicitations from Houston, Harris County, and the surrounding area to Rice University and President Pitzer. He spoke extemporaneously, and the text of his remarks unfortunately is not available.

President Philip G. Hoffman of the University of Houston was then introduced and spoke briefly as the representative of the Houston institutions of higher learning.

I consider it a high honor to represent the several Houston institutions of higher education in extending congratulations to President and Mrs. Pitzer and Rice University on this auspicious occasion.

The faculties and staffs of these sister institutions have watched with pride and a keen sense of identification the outstanding progress and development of Rice University which we join in honoring this semicentennial year.

The institutions for which I speak this evening especially desire to extend best wishes to President and Mrs. Pitzer on this happy inaugural occasion and to congratulate the Board, administration, faculty, and students of Rice University on the choice of this distinguished educator as President of this fine University.

We cherish the cordiality which characterizes interinstitutional relationships in Houston and mutually pledge our continuing co-operation in the years to come.

I also have the honor of being the official representative of the Association of American Colleges on this inaugural occasion. I am thus able to expand the sentiments which I have expressed to include the 845 member colleges and universities all over this nation.

Chancellor Harry Huntt Ransom of the University of Texas offered greetings on behalf of the nation's universities and, upon request, spoke briefly on "Graduate Study in the Southwest."

It is an honor (and a pleasant honor, which some academic duties are not) to bring to this company gathered to honor President Kenneth Pitzer on the evening of his inauguration greetings and congratulations from

sister universities. I am not sure why academic etiquette requires that universities always be considered sisterly. I must add that both men and women of other institutions mix their congratulations with envy of Rice University in its capture of this chemist, this Californian.

I first heard and saw Kenneth Pitzer in action at a conference up north —I think it was in Ohio. After his first performance there, one of my colleagues was both emphatic and repetitious on the point that he did wish that "Texas could get that Californian to change his address." In that context, "Texas" did not mean Rice. Yet, since the day Rice managed to change the address of the Pitzers, all Texas has claimed them, as residents, as friends to the best prospects of the state, and as harbingers of what higher education in Texas—under leadership like Pitzer's—can become some day, some day very soon.

Those of us who can remember how, about half a century ago, a streetcar ride to the borders of the Rice campus could fill a hot Sunday afternoon with adventure are tempted to treat the University's new president to a private marveling about the growth of Rice. Yet in many special senses and like very few universities in this country, Rice sprang full-grown. From its inception, it was based upon a concept of the world society of scholars (witness those who attended its first ceremonies and the composition of its first faculty). At the very start, it assumed a no-nonsense attitude toward the pursuit of truth. Yet this broad sweep of perspective and that rigorous dedication to the verities were combined with the most democratic of all education plans: admission based upon talent, untaxed by tuition, and encouraged by an open invitation to learning.

The committee on arrangements has asked me to join the educational greeting and the swift reminiscence of beginnings to a few short observations on graduate education and research in the Southwest, at present and in future prospect.

First, I must qualify my long title by brief redefinition. There is not much "southwestern" about southwestern education, or if there is a great deal, there should not be. Intellect is intellect, art is art, and science is science in Texas or Timbuktu. This obvious fact is likely to be neglected by educational patriots and politicians, both local and national; it is also neglected too often by professor and administrators who brew a kind of local comfort out of regional statistics or work up a contrary local horror from comparisons of regional budgets.

Nevertheless, I am content to look at graduate education from the vantage point of the Southwest, although I think that none of us should confine our notions of "highest education" within that ample and enlarging geographical area.

Graduate studies—and what was once called "independent research"—have changed in our time. Independent research once meant the opportunity to pursue an idea or a synthesis of ideas without regard to public pressure, administrative regimentation, or the terrible quantitative impositions of educational "production"—course grades, credit hours, and the weighing-in process of faculty bibliographies. It meant, instead, the pure

oxygen by which scholars were revived from paper-grading and laboratory routine (usually at a ten-day Christmas recess and an unpaid, ill-nourished three months of so-called "summer vacation").

New sources of subsidy have made the economic background (and of course the economic underpinning) of this resuscitation less perilous for the scholar. We have been much too preoccupied with explaining away these economic facts and much too little occupied with defending and re-defining the purposes of research. Except for Shakespearean soliloquy and perhaps Byronic satire, no literature in English has reached such heights of irony as the busy justifications by university presidents accused of accepting "handouts" from Washington.

For, considering the national and regional importance of graduate study and research, we do not have to resort to fancy rhetoric. The powers of knowledge and the dynamism of research can keep this country free, can save it from surrender to conquest—and, what is much worse, surrender to apathy, ignorance, and prejudice. The profits of knowledge, constantly advanced by research, can maintain and periodically re-establish the economy of a region or a state. These are facts, as clearly demonstrated as any economic or political tenet of this country.

In southwestern education on the graduate level, there has been an occupational disease which might be called "addiction to extremes." We have tried to arrive at a sensible, workable plan of doctoral study and postdoctoral research by averaging dismal despair and wild optimism. The time has come to be realistic.

Realism will sooner or later suggest that we look coldly at our physical and economic resources, our intellectual talent, and our educational future without recourse to patriotic sentiment or political expediency.

Realism will demand—indeed, it already demands—that we quit saying we are going to do what we know very well we cannot do without changing the popular attitudes toward research and intellectual attainment. Realism may ask us to change the attitude first and talk afterward.

Realism will never persuade us to neglect the tradition of the state—the dreams of fifty years ago, or fifty years before that.

We will be left with enough essential materials of education to bring off the necessary fusions and fissions of a new age in graduate education and research. Meanwhile, our mouths will not be stuffed with claptrap about half-possibilities and near-misses; our days will not be crammed with futile planning and empty expectation.

In bringing realism, with dignity and intellectual distinction, to bear upon the future of Texas, Rice University will play a key part. And the role of its president will keep growing in the significance of leadership. When Kenneth Pitzer accepted the helm of this great institution, he must have known how much the present state of education would expect from his vision and how much the future would be formed by his action. All his colleagues, sensing this dual challenge, wish him Godspeed, many happy orbits, and a safe splash.

Following these comments by Chancellor Ransom, Chancellor Croneis presented President and Mrs. Pitzer, who received a standing ovation from the assembled guests. President Pitzer responded:

Mr. Chairman, Ladies and Gentlemen: My words are inadequate to express my appreciation for all that has been said today and for all that has been done to make us welcome this past year.

The cordiality and consideration which Houstonians show to newcomers as well as old residents are indeed remarkable, and especially so for such a large city. Jean and I deeply appreciate the warmth and thoughtfulness we have experienced continuously.

To the many delegates from far and near who endured the broiling sun this afternoon, I say a most sincere thank you for coming and for so honoring Rice University and the office of its Chief Executive, as well as myself personally.

Many have remarked that a university presidency is really a team operation, and I have a wonderful teammate; I want her to stand again. [Mrs. Pitzer rose and received a standing ovation.]

[The President then informally acknowledged with thanks the remarks of Dr. Croneis, Dr. Houston, Dr. Hoffman, Dr. Ransom, and Mayor Cutrer and commented about his pleasure in working with Mr. Brown and Mr. Rayzor, as well as all other members of the Board of Governors. He also expressed particular appreciation that Congressman Albert Thomas had been able to be present even though Congress had not yet adjourned.]

In preparing some further words of response for this evening, I have looked into the recent book by President Emeritus Dodds of Princeton entitled, *The Academic President—Educator or Caretaker*, and will mention a few points. First, I found that the average term of office of college and university presidents is 8.1 years, whereas the application of simple arithmetic to the records of Rice University yields a result three times that long. There is clearly something special about Rice; I will leave it to you to draw any further conclusions. Second, I found the statement: "The presidential office will go the way of the buffalo if it loses its traditional character of educational leadership." Since I don't care to go the way of the buffalo, I was about to prepare a serious speech when I noted that Dodds also said inaugurals usually come at the wrong time for detailed speeches on educational policy and inaugural banquets were an even less appropriate occasion.

The books recording the opening of Rice are an enormous storehouse of interesting items. My former affiliates from California will share my interest in a 1912 comment of Sir William Ramsey: "Well gentlemen, there is one thing that has struck me as a danger threatening American Universities. It is the large number of students enrolled. These numbers are growing too large. Let me give you a specific instance. The professor of chemistry in the University of California told me lately that he had over two thousand students to teach. To teach two thousand students is an impossibility."

There is great interest and support for higher education in Houston. Since 1934 four colleges and universities have been founded in Houston in addition to the development of the great complex comprising the Texas Medical Center. What other city can match that record? Rice welcomes the constructive competition of all as we co-operate to provide the variety desirable in higher education. This sort of teamwork is characteristic of Houston.

Finally, may I say again what many of you may have heard me say before—that Rice University, probably more than any other university anywhere, has a unique opportunity for development and growth in stature in the decades immediately ahead. I have noted the vitality of Houston and Texas and the interest in university education and research.

This area is on the threshold of a great development in new types of industry based on the new ideas of the space age. Rice is destined for a key role.

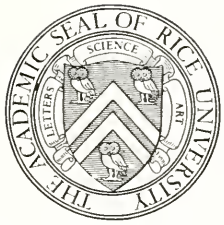
Rice has the tradition of quality which is of inestimable value and will maintain it as new programs are initiated and present activities are extended. This unique opportunity beckons now to all of us at Rice, Governors, Faculty, Students, as well as Administrators.

Now, I shall abide by the last portion, at least, of a motto of one of our Faculty: "Be bold, be brief, and begone!"

Following the remarks of the President, Chancellor Croneis introduced the Reverend Hyman Judah Schachtel, Rabbi of Congregation Beth Israel, who brought the dinner to a close by pronouncing the benediction:

Almighty God, as this first day of his inaugural ceremonies ends, we ask Thy continued blessings upon Dr. Kenneth Pitzer and his dear ones, as well as the officers and trustees and faculty and students and friends of Rice University. Thou hast indeed favored us during these fifty years in which an Institute has become a University, a fine college in the Southwest has become a distinguished center of learning destined to bless our nation and the world.

May all who have gathered here, who have come from near and far, return to their homes inspired and enlightened by these memorable events. Bless the scholars who have come to share their learning with us. May their research findings contribute to the coming of an honorable peace among all Thy children. May each of us be resolved to do Thy will so that Rice University and this great city may go forward from strength to strength. "Long may our land be bright with freedom's holy light, protect us by Thy might, great God our King." *Amen.*



WILLIAM MARSH RICE UNIVERSITY

SEMICENTENNIAL CONVOCATION

Ten o'clock
Thursday, October the Eleventh
Nineteen Hundred Sixty-two
Houston, Texas

The Semicentennial Convocation

THE SEMICENTENNIAL CONVOCATION opening the Academic Festival was held at 10:00 A.M., October 11, 1962, in the Houston Music Hall in downtown Houston at the corner of Walker and Bagby streets. It had been scheduled to be held on Lovett Hall Plaza where the inaugural ceremonies had taken place, but the extremely hot weather made it desirable to use the air-conditioned facilities afforded by the Music Hall. Robing was done on the campus, and sixteen air-conditioned buses transported the delegates, the distinguished guests, members of the Faculty, the Senior Class, the Rice Band, and the Rice Chorus to the Music Hall.

Because of the restricted space, the academic procession was limited to the Faculty, the members of the Board of Governors, and the President's Party, who marched from the foyer and took their places on the stage. Delegates of Institutions of Higher Learning, Delegates of Learned and Professional Societies and Other Institutions, and members of the Senior Class were seated in the front rows of the center sections. The Band and the Chorus sat in the balcony.

The President's Party included President Pitzer, who presided over the convocation, and the twenty-seven distinguished scholars selected to receive the Semicentennial Medal of Honor and Certificate of Merit, together with their escorts. The honorees and escorts are listed below:

BRAND BLANSHARD *for Distinction in Philosophy*
Escorted by J. Street Fulton

HUBERT EVELYN BRAY *for Distinction in Mathematics*
Escorted by Alan J. Chapman

BERTRAND HARRIS BRONSON *for Distinction in English Literature*
Escorted by Carroll Camden

JAMES HENRY CHILLMAN, JR., *for Distinction in Fine Arts*
Escorted by William H. Masterson

WILLIAM MAURICE EWING *for Distinction in Geology*
Escorted by Carey Croneis

Thomas Keith Glennan *for Distinction in Engineering*
Escorted by Franz R. Brotzen

William Vermillion Houston *for Distinction in Physics*
Escorted by G. H. Richter

Louis Landré *for Distinction in Comparative Literature*
Escorted by André M. G. Bourgeois

Jean Leray *for Distinction in Mathematics*
Escorted by Floyd E. Ulrich

Alan Dugald McKillop *for Distinction in English Literature*
Escorted by George G. Williams

Margaret Mead *for Distinction in Anthropology*
Escorted by Edward Norbeck

Allan Nevins *for Distinction in History*
Escorted by Frank E. Vandiver

Henri Maurice Peyre *for Distinction in French Literature*
Escorted by Donald C. Mackenzie

William Grosvenor Pollard *for Distinction in Physics*
Escorted by J. R. Risser

Vladimir Prelog *for Distinction in Chemistry*
Escorted by Richard B. Turner

John Lyon Reid *for Distinction in Architecture*
Escorted by William W. Caudill

Glenn Theodore Seaborg *for Distinction in Nuclear Chemistry*
Escorted by Winfred O. Milligan

Claude Elwood Shannon *for Distinction in Applied Mathematics*
Escorted by Paul E. Pfeiffer

Fritz Stüssi *for Distinction in Civil Engineering*
Escorted by James R. Sims

Albert Szent-Györgyi *for Distinction in Biochemistry*
Escorted by Roy V. Talmage

Sir Geoffrey Ingram Taylor *for Distinction in Engineering Science*
Escorted by Herbert K. Beckmann

Sir George Paget Thomson *for Distinction in Physics*
Escorted by Harold E. Rorschach

Arnold Joseph Toynbee *for Distinction in History*
Escorted by Floyd S. Lear

Radoslav Andrea Tsanoff *for Distinction in Philosophy*
Escorted by Niels C. Nielsen, Jr.

Jacob Viner *for Distinction in Economics*
Escorted by Edgar O. Edwards

Harold Albert Wilson *for Distinction in Physics*
Escorted by Gerald C. Phillips

Sakae Yagi *for Distinction in Chemical Engineering*
Escorted by Riki Kobayashi

Following the playing of the national anthem, the invocation was given by Dr. Niels C. Nielsen, Jr., J. Newton Rayzor Professor of Philosophy and Religious Thought:

Almighty God, our Father, we acknowledge Thy dominion in the universe and in our lives. Of Thy faithfulness there is no end. One generation to another shall praise Thee. We give Thee thanks for Thy blessings upon us in the pleasant places in which our lot has been cast. Most particularly, we invoke Thy good Providence for this our University as she begins her second half-century of learning and service. Endow her, administration, faculty, and student body, with dedication, high purpose, integrity of life, to the end that she may serve all mankind. Teach us, O God, to number our days, to know that they are but as a watch in the night before all eternity. Time, like a never-ending stream, bears all its sons away. Give us to see life clearly in the light of Thy judgment, to serve the truth, which alone abides, while men and empires come and go. In the spirit of Christ we pray. *Amen.*

President Pitzer opened the convocation with the following remarks:

Ladies and Gentlemen: It is my honor at this time to open the Semicentennial Convocation and Academic Festival of William Marsh Rice University.

Fifty years ago today the opening convocation of the Rice Institute was celebrated with the help of an internationally distinguished group of scholars, who presented papers concerning their several disciplines. We are honored today by a similarly distinguished company of scholars, and we await with interest their lectures later today and tomorrow.

Before proceeding with our program today, I wish to express our appreciation to the committee which organized the Semicentennial program. The members are listed on your program. I call your attention particularly to the fact that the son of Rice's first President is the chairman of that committee.

Mr. Malcolm Lovett has brought to this program the knowledge and devotion of fifty years of close association with Rice. [At the President's request, Mr. Lovett stood and received applause from the audience.]

The full burden of bringing to fruition the ambitious plans of the Semicentennial Committee fell upon its Executive Director, who also has served as an invaluable adviser to me during the year that I have been at Rice. I want to express my special appreciation also for his graciousness in presiding at the banquet last night: Chancellor Carey Croneis. [Chancellor Croneis stood on request and received applause.]

We are also privileged to have present a man who might have been called the Executive Director of the opening ceremonies of Rice fifty years ago. John Thomas McCants served as President Lovett's secretary before the opening of the Institute. Later a Faculty member and Bursar—but more than that, a friend and counselor to generations of Rice students

—Mr. McCants typifies the devoted service of the Rice Faculty and Staff. [Mr. McCants stood at President Pitzer's request and was applauded.]

I shall conclude these opening remarks by reading three quotations from the opening ceremonies of 1912.

President Lovett spoke as follows concerning William Marsh Rice:

"There are men and men and men. There are men of millions and men of millions. William Marsh Rice was a man in a million, an inspired millionaire who caught the prospect of a monumental service to Houston, to Texas, the South, and the Nation. With no resources other than soundness of body and strength of will, from a New England home of English and Welsh forebears, he came to Texas in his youth to make his fortune. By temperate habits of industry and thrift he made a fortune in Texas. He left his fortune in Texas. He gave his fortune—the whole of it—to Texas, for the benefit of the youth of the land in all the years to come; thus writing in the history of Texas the first conspicuous example in this commonwealth of the complete dedication of a large private fortune to the public good. Moreover, resolutely living a simple life, he denied himself even the 'durable satisfaction' of seeing his philanthropy's realization in order that he might give more abundantly of life to his fellows and their successors. Shrewd in foresight, strong in purpose, of stout courage and independent spirit, generation after generaton will rise to call him blessed —'with honour, honour, honour, honour to him, eternal honour to his name.' "

Sir Henry Jones, Professor of Philosophy at Glasgow, described our basic objective in terms perpetually valid:

"There is no doubt as to the means whereby man masters his world and converts its blind forces into beneficent powers. They are the same means, in the last resort, as those which help him in the still more difficult enterprise of mastering himself. They have all one, and only one, purpose. It is that of so operating upon the mind of man as first to awaken and then to foster that passion for truth which is the condition of all sincerity in conduct as well as of all advancement in knowledge, and which brings a clear conscience as well as a clear mind."

In 1912 Henry Van Dyke read the Inaugural Poem, which concludes with lines equally appropriate to Texas in the Space Age:

"Your old men have dreamed this dream and your
young men have seen this vision.
The age of romance has not gone, it is only
beginning;
Greater words than the ear of man has heard
are waiting to be spoken,
Finer arts than the eyes of man have seen are
sleeping to be awakened—
Science exploring the scope of the world,
Poetry breathing the hope of the world,

Music to measure and lead the onward march
of man!
Come, ye honoured and welcome guests from the
elder nations,
Princes of science and arts and letters,
Look on the walls that embody the generous
dream of one of the old men of Texas,
Enter these halls of learning that rise in
the land of the pioneer's log-cabin,
Read the confessions of faith that are carved
on the stones around you:
Faith in the worth of the smallest fact and
the laws that govern the starbeams—
Faith in the beauty of truth and the truth
of perfect beauty,
Faith in the God who creates the souls of
men by knowledge and love and worship.
This is the faith of the New Democracy—
Proud and humble, patiently pressing forward,
Praising her heroes of old and training her
future leaders,
Seeking her crown in a nobler race of men
and women—
After the pioneers, sweetness and light!"

Presentation of Medals of Honor

With the conclusion of these opening remarks, President Pitzer then announced the presentation of the Semicentennial Medals of Honor:

It has been decided to commemorate this fiftieth anniversary of Rice University by presenting Medals of Honor to certain individuals who have served mankind through unusually meritorious contributions to knowledge, to education, and to their respective professions or disciplines, and who also have a particular affiliation with this University, either through many years or on this special occasion. These medals are awarded on the authorization of the Board of Governors of William Marsh Rice University after recommendation by academic representatives and officers, and it is now my pleasure to present the medals in behalf of the University.

Each honoree was presented individually to the President by his escort. The President then read the appropriate citation and, assisted by the Chief Marshal, draped the Medal of Honor attached to a blue-and-gray ribbon around the neck of the recipient. He then shook his hand and simultaneously presented him with the Certificate of Merit

in its case. The first honoree was Dr. Harold Albert Wilson, one of the members of the original Rice Faculty of 1912. The other honorees were presented and honored in alphabetical order. The citations read by President Pitzer are as follows:

Harold Albert Wilson, trained in the great British tradition of physics at the Cavendish Laboratory, early measurer of the charge on the electron, founder of the Rice Physics Department, intellectual father to many scientists, Rice University is proud to award you its Medal of Honor.

Brand Blanshard, interpreter of the nature of thought, philosopher of style and philosophical stylist, defender of sanity in a turbulent world, Rice University takes pleasure in conferring upon you its Medal of Honor.

Hubert Evelyn Bray, your distinctive career in mathematics and your selfless service to this University for most of its first fifty years stand as monuments to scholarship and devoted teaching and serve as inspirations to Faculty and students alike. Your Alma Mater, therefore, takes pleasure in conferring upon you its Medal of Honor.

Bertrand Harris Bronson, wide-ranging scholar and critic, musicologist, distinguished lecturer, student of both cultured and folk literature, whose accomplishments have illumined the intellectual life of our times, Rice University takes pleasure in awarding you its Medal of Honor.

James Henry Chillman, Jr., scholar and teacher, wise and influential counselor in the development of art and architecture in our community, perceptive interpreter of ancient and modern culture, Rice University is pleased to confer on you its Medal of Honor.

William Maurice Ewing, native Texan, son of Rice, savant of the Seven Seas, explorer of their depths, and geologist of the ocean floor, your Alma Mater takes pleasure in conferring upon you its Medal of Honor.

Thomas Keith Glennan, contagious enthusiasm tempered by appreciation of practical realities characterize your organizational genius. The exploration of outer space, the development of atomic energy and of Case Institute attest to your abilities. Rice University takes pride in presenting you this Medal of Honor.

William V. Houston, distinguished physicist, master teacher, adviser to governments, second President of Rice University, I am happy to award you this Medal of Honor in recognition of your outstanding services to Rice, to science, and to the nation.

Louis Landré, distinguished scholar and inspiring teacher, disseminator of French culture in the English-speaking world, and of English culture in the French commonwealth, Rice University takes special pleasure in bestowing on you its Medal of Honor.

Jean Leray, mathematician of unusual insight and versatility, outstanding contributor to areas from hydodynamics to pure topology, master of partial differential equations, I am happy to present you the Rice Medal of Honor.

Alan Dugald McKillop, renowned authority on the literature of England, author of innumerable works of scholarship and criticism, teacher at Rice for over forty years, the University which has been so long honored by your presence is pleased to present you with its Medal of Honor.

Margaret Mead, citizen of the world, bold interpreter of her own society and the ways of mankind, forerunner in the development of anthropology, ethnologist of native cultures of the Pacific, Rice University takes pleasure in awarding you its Medal of Honor.

Allan Nevins, historian, man of letters, of wisdom and wit, of broad scholarly view and of deep human understanding, Rice University is honored to bestow upon you its Medal of Honor.

Henri Maurice Peyre, sensitive interpreter of his native culture, resourceful administrator, scholar and lecturer, whose wide professional mastery is deepened by informed interest in a yet wider world, Rice University takes pleasure in awarding you its Medal of Honor.

William Grosvenor Pollard, distinguished administrator, natural philosopher and theologian, contributor to both scientific and religious thought, benefactor of men, your Alma Mater recognizes your courage and achievement with this, her highest honor.

Vladimir Prelog, native of Yugoslavia, adopted son of Switzerland, prover of the secrets of molecules, scholar of international distinction, it is my privilege to confer upon you Rice University's Medal of Honor.

John Lyon Reid, a people's architect, architects' teacher, prolific practitioner, and sensitive translator of human values into architecture, Rice University takes pleasure in awarding you its Medal of Honor.

Glenn Theodore Seaborg, discoverer of a multiplicity of new chemical elements, distinguished scholar and educator, university and government administrator, Rice University takes great pleasure in presenting to you its Medal of Honor.

Claude Elwood Shannon, engineer and mathematician, pioneer in the application of Boolean algebra to switching circuits, and founder of modern information theory, Rice University is pleased to confer upon you its Medal of Honor.

Fritz Stüssi, analyst and designer of monumental bridges; noted teacher, researcher, author, and historian of structural technology, Rice University takes pleasure in awarding you its Medal of Honor.

Albert Szent-Györgyi, discoverer of actin and myosin, researcher in the chemistry of muscular contraction, biological theorist, and student of molecular biology, Rice University takes pleasure in presenting to you its Medal of Honor.

Sir Geoffrey Ingram Taylor, pilot of the pioneers of early flight, first among the engineers of the Atomic Age, founder of modern fluid dynamics, I take pride in presenting Rice University's Medal of Honor.

Sir George Paget Thomson, outstanding contributor to physics and aerodynamics, investigator of the nature of the electron, because of your foresight and devotion in the application of science in our society, Rice University is proud to present to you its Medal of Honor.

Arnold Toynbee, public servant, student of the philosophy of history, interpreter of the decline of ancient cultures and the rise of modern nations, I have the honor to confer upon you the Rice Medal of Honor.

Radoslav Andrea Tsanoff, Rice's first philosopher, stimulating teacher, distinguished author of many volumes, patron of the arts, champion of the moral foundations of the spiritual life of man, Rice University takes pleasure in conferring upon you its Medal of Honor.

Jacob Viner, economists' theoretician, esteemed public servant and social scientist, historian of economic thought, master of the political economy of international trade, Rice University takes pleasure in awarding you its Medal of Honor.

Sakae Yagi, scholar, educator, and administrator, internationally distinguished chemical engineer and intellectual leader of the Japanese chemical industry, Rice University takes pleasure in awarding you its Medal of Honor.

Address by Professor Toynbee

After the presentation of the Medals of Honor, the audience and the Rice Chorus sang "Veni Creator Spiritus." President Pitzer then introduced the principal speaker, Professor Arnold J. Toynbee of the University of London:

Arnold Joseph Toynbee, one of the world's most widely known historians, was educated at Balliol College, Oxford, and at the British Archaeological School of Athens. Fellow and tutor at Balliol from 1912 to 1915, he was engaged in intelligence work for the British government from the latter year until 1919, when he became Professor of Byzantine and Modern Greek Languages at the University of London. He is presently Professor Emeritus of International History at that institution.

Professor Toynbee has been a prolific writer since 1915, when, at the age of twenty-six, the publication of his first two books—*Nationality and War* and *The New Europe*—brought him widespread academic recognition. One of his most recent works, *Reconsiderations,* is Volume XI of his internationally known *Study of History*.

I am, therefore, especially pleased to be able to present him to you again —now to speak on the subject, "The Changes in the United States Position and Outlook as a World Power during the Last Half-Century."

After acknowledging the introduction by President Pitzer, Professor Toynbee delivered the following address:

We have gathered here at Rice University this week to celebrate one of the notable achievements of the last half-century. Within these last fifty years, Rice University has made its passage from birth to maturity. There can be no greater change than that; it is the greatest change conceivable, and it has taken place within a span of time that is short on any standard of measurement. A half-century is shorter even than that proverbial symbol of brevity, the average span of a human lifetime; it is shorter, indeed, than the present average length of a working lifetime, between childhood at one end and senility or death at the other. In this room at this moment there must be among us a number of Rice alumni who graduated in the first class. I am sure these have all retained their native Texan vigor, including their full powers of memory. If one is in one's early seventies today, and if one has kept his wits, one has more to remember, I should guess, than any previous generation has ever had. Our lifetime has been crowded with events. The magnitude of the change that has taken place on this campus within this last half-century is matched by the magnitude of the contemporary change in the rest of the United States and in the whole world.

My subject this morning is, as you know, the change in the United States position and outlook during this last half-century. It may seem audacious for a foreigner to offer to talk to an American audience about this. A foreigner's view is inevitably superficial, and he is sure to overlook many important points that are obvious to American eyes. I have been emboldened by two things. One of them is that an inside view, such as my audience has, may sometimes miss seeing points that are visible to an outsider, such as I am. An outsider's attention may sometimes be caught by points that are ignored by Americans because these points are so familiar to American minds that they take them for granted. My second reason for choosing this subject is that, within these last fifty years, the United States position and outlook have ceased to be just the private concern of the people of the United States and have become one of the major public concerns of the human race. This has been an awkward change for both the United States and the world. It is unpleasant to lose one's privacy; it is also unpleasant to lose one's independence and to find one's fate hanging on other people's decisions and no longer just on one's own. These two awkward changes have, between them, revolutionized the relations between the United States and the world in the course of the last half-century and, in revolutionizing them, have put a considerable strain on them. This particular change is at the very heart of my subject, so I shall be coming back to consider it more than once before I have done.

I have perhaps one slight personal advantage for discussing the change

in the United States position since 1912. I have known the United States since that year. It is true that I did not set foot in the United States till 1925, but in 1912 I met the United States in Greece and got my first sight of her, as a foreigner should perhaps get it, through the eyes of immigrants. In 1912 Greek emigration to the United States was at its peak, and every Greek village was full of emigrants who had made enough money on this side of the Atlantic to pay for a visit to their homes in Greece. The more remote and the less prosperous the village was, the larger the percentage of its population that had crossed the Atlantic to improve its condition.

By 1912 the flowing tide of Greek migration had just reached the Middle West. As I talked to people in the village store in the evening, Kansas City and Omaha, which had been only names for me before, became vivid and thrilling realities. I could now picture their beautiful asphalt sidewalks, along which one could walk with impunity in glacé-kid shoes. Anyone in this room who has walked over the mountains of Greece will appreciate that a city where one could tread smoothly seemed, to a Greek immigrant, like some incredibly glorious New Jerusalem. This was the first account of the United States that I had had from firsthand witnesses, and their report was enthusiastic. Here was a land of promise, and the best thing about it was that the access was entirely free. You could just take a passage and go there (an immigrant's fare was cheap even by Greek standards at the time). What a contrast to a benighted country like, say, Turkey, where you were not allowed to land without showing a passport and being examined by the police. I shall come back to this question of immigration, too. One of the major changes in the past half-century is concerned with that.

To appreciate the extent of the change in the United States position during this last half-century, one must find some yardstick for measuring it. There are two obvious yardsticks for the purpose. One can compare this last half-century in the United States with the same half-century in the world as a whole, or one can compare it with the preceding half-century in the United States itself.

The pace of change in the United States since 1912 seems headlong when one measures it by the pace during the fifty years before 1912. That was the half-century between the end of the War between the States and the beginning of the First World War, and that was a relatively stable half-century in the history of the United States. The result of the War between the States (may I call it—as foreigners do call it—the Civil War, for short?)—well, the result of that war was, I suppose, to confirm a number of long-term tendencies in United States history. It confirmed the Union, and, within the Union, it confirmed the ascendancy of the North and, still more, of the northern way of life. This northern way became, in fact, the United States way, except in the Old South—and, even there, the northern way was gaining ground. Other features in the landscape, too, remained unaltered. The foreign policy of the United States was still Washington's and Monroe's; if, at the turn of the century,

anyone had forecast Wilson's and Franklin Roosevelt's foreign policy, he would not have been believed; if he had forecast Truman's and Dulles' and Kennedy's foreign policy, he would have been thought to have gone out of his senses. At the political level, the policy was one of self-insulation: no entangling alliances for the United States with European powers; no interference by European powers in the American hemisphere.

This policy of self-insulation was not, of course, thoroughgoing. Even on the political plane the phobia of foreign entanglements did not, if I am right, ever inhibit this country from entangling itself across the Pacific. For instance, the Spanish-American War did not arouse in American minds those misgivings and repinings that followed American participation in the First World War. Moreover, the shrinking from European entanglements was the American reaction to political European entanglements only. The people of the United States never thought of disentangling themselves from Europe economically. The United States achievement of political independence did not check the growth of her transatlantic trade, and, throughout the nineteenth century, European capital and labor were the instruments that the United States used—and used without stint—for developing the resources of her immense national domain. The inflow of European investments and European immigrants in the nineteenth century enabled the American people to win the West. If the United States had not continued to draw upon Europe's resources in these two ways, I daresay the frontier of settlement might not, even yet, have reached the Rio Grande and the Pacific Coast. We might have been meeting here today to celebrate the laying of the foundation stone of Rice University, instead of celebrating the University's jubilee year in these splendid buildings.

Economic relations are, of course, by their very nature, a two-way system of communications. The nineteenth-century United States was an underdeveloped country; but, unlike some of the countries that are still in this stage today, the United States did always pay her way; and the means of payment that she found produced economic repercussions in the home countries of her European creditors. Europe's first experience of the United States economic power was the flooding of Europe with cheap American wheat in and after the 1870's. This was a boon for Europe on balance. It brought timely economic relief to the rapidly growing population of Europe's industrial cities, but it depressed the standard of living in the European countryside. In Britain, this remained depressed till the Second World War. Denmark met the same agrarian crisis with greater intelligence and energy. She met it by going over from mixed farming for home consumption to skilfully managed specialized agricultural production for export. But, in one way or another, most European countries' lives were affected by those massive imports of American foodstuffs from the 1870's onward. This was an indication of the importance of the role that American economic productivity was going to play, first in Europe and then all over the world, in the half-century of the world wars.

What would have been the picture of the United States that would

have been painted for me in 1912 by her own citizens if, in 1912, I had been traveling in the United States and not in Greece? It would, I believe, have been much the same—put in less simple-minded terms—as the picture of the United States that I was actually given in Greece in that year. Americans too, I fancy, would have depicted the United States in 1912 as being a Promised Land for wanderers in the European wilderness. Here, they would have told me, was a country in which ex-Europeans could make a new start with a fairer prospect. By crossing the Atlantic, they could jump clear of the old evils of Europe. They could escape from Europe's inveterate follies and crimes: the senseless European international power game; the burden of competitive armaments and the bloody and destructive wars which this power game made inevitable; the political oppression of subject nationalities and of liberal movements by reactionary-minded governments; the economic oppression of tenants by landlords and of workers by employers. Here was a country where every man was his own master. Americans describing the United States in 1912 could cite, as witnesses, a host of American citizens whose grandparents had taken refuge in the United States from the famine in Ireland in 1846, and from the repression of the revolution in Germany in 1848, and from half a dozen other nineteenth-century European calamities and atrocities.

This pre–world-wars self-portrait of the United States was, I should say, true to life as far as it went, but I can think at once of two features of nineteenth-century American life that it left out.

This picture portrayed the United States as being unaggressive and unoppressive by comparison with contemporary Europe. Yet there were witnesses who would have given a different report—for instance, the survivors of the American Indians, the grandchildren of the Mexicans of the generation of 1846, and the tardily emancipated descendants of the Negro plantation slaves. These had been victims of the United States, not of any European power; so, for them, the United States would have been the symbol of colonialism, imperialism, and economic and social injustice. The war that the United States made on Mexico, and the sweeping annexations that followed it, were, in fact, a classical example of imperialism. The War between the States was the greatest and most bloody war of any in the nineteenth century anywhere. The abolition of slavery in the United States in 1863 was anticipated by the abolition of serfdom in Russia in 1861, and, compared with the American slave's lot, the Russian serf's lot had been an enviable one.

The sad truth is that the Europeans who had colonized the Americas had brought Europe's evils with them to the New World; and this is not surprising. An Atlantic voyage—even a slow and painful one in a small sailing ship—is not a cure for original sin. One cannot jettison in the ocean the burden that Bunyan's Pilgrim carries on his back. The Roman poet Horace lived to learn this salutary truth. Horace grew up in bad times—times not unlike these last fifty years of ours—and in an early poem he played with an escapist fantasy. He imagined some nonexistent western isles of the blessed for which he and his fellow Romans could set sail and

so leave their civil wars behind them in Europe. In later life, Horace came to know better, and then he wrote the memorable line: "Caelum, non animum, mutant qui trans mare currunt."[1] "One changes one's clime only, not one's character, by scudding across the sea."

Another feature of nineteenth-century American life that the conventional pre–world-wars picture left out was the part played by religion. One of the things that the European colonists in the New World brought with them from the Old World was their previous religion, and they would have been horrified if it had been suggested to them that they must make a break with that if they were in earnest about their program of making a new start in life on new ground. So far from that, the colonists and their descendants and the many generations of immigrants who have followed in their wake have always cherished their Old World religion. Indeed, the motive that led some of the most notable of them to pull up their roots in Europe and to cross the Atlantic was a wish to remain faithful to their European religion without any longer being penalized on this account, as they had been penalized at home.

However, deep down, there is a contradiction between the ideal of Americanism and the ideal of Christianity on the question of what one's relation with one's neighbor ought to be. One of the aspirations of Americanism was to insulate America from the rest of the world in order to turn America into a local earthly paradise whose citizens should be "not as other men are." One of the aspirations of Christianity is to "preach the Gospel to every creature," including all the publicans, harlots, and sinners. Christianity, like Islam and Buddhism, is a missionary religion, and, like them, it is this intrinsically, in virtue of its fundamental beliefs and ideals. Christianity's world-wide mission, like theirs, is part of the religion's essence, and therefore it is ultimately incompatible with sectionalism on any level—spiritual, political, or economic. The nineteenth century saw the emergence of a small band of Americans who were Christians before everything else and who therefore recrossed the Atlantic to preach Christianity in the Old World.

At the time, these nineteenth-century American missionaries did not attract much attention. To friendly American eyes their deliberate rejection of economic opportunities at home seemed disinterested, no doubt, but quixotic. To unfriendly eyes their conduct may have seemed un-American. To remigrate from the American earthly paradise to the Old World wilderness came near to being an act of treason against the Promised Land—just as a whale might seem to an elephant to be a traitor to the order of Mammalia for having slithered back off the good dry land into the primordial ocean. Viewed in retrospect today, the nineteenth-century American missionary movement looks a good deal more significant. It looks like a premonition, through religious faith, of a truth that the present generation in the United States has been learning, with pain and grief, through harsh experience. This truth is that our social obligations to our fellow human beings have no limits short of embracing the entire human

[1] Horace, *Epistulae*, Book I, Ep. 11, l. 27.

race. Mankind is a single family with a single destiny, for weal or for woe. In the Atomic Age, which mankind has entered in our lifetime and in which our descendants will have to live so long as the human race lasts, a recognition of the human race's solidarity is one of the necessary conditions for the race's survival. All honor to those nineteenth-century American missionaries who recognized this truth so far in advance of most of the rest of us, and who had the faith, courage, and sincerity to stake their lives on acting in accordance with their spiritual insight. They were led to this act of self-sacrifice by their religion, and they dedicated their lives to it.

Christianity's recognition of the brotherhood of all men is a warning that a sectional earthly paradise is an unsatisfying spiritual ideal. There were more prosaic warnings that it was also not going to be a practicable objective. At about the time when Rice University was founded, Blériot flew across the English Channel in a mechanically propelled heavier-than-air conveyance, and, by then, Rutherford was already at work on exploring the structure of the atom. These were the first steps toward the forging of the annihilating intercontinental weapons that our governments now hold in their hands. By the same date a change was taking place in the balance of power in Europe, and this change was going to make the United States traditional foreign policy of avoiding entanglements in Europe no longer adequate as a means for keeping the United States secure in her own hemisphere.

From the date of Britain's recognition of the United States independence down to the rise of the Second German Reich, the United States policy of political self-insulation from Europe had been underwritten by British policy backed by British seapower. It was, I suppose, a happy chance for America that, during Britain's century of world power, Britain had the means, as well as the will, to prevent any single continental European state from gathering up the resources of the whole of Europe into its own hands and using them for conquering the world. When Napoleon was pursuing this aim, the United States did not have to bother much about him and his ambitions because Britain—of course, entirely in Britain's own interest—was standing between Napoleon and her. In fact, Napoleon had to sell Louisiana cheap to President Jefferson because British seapower made it impossible for France to take delivery of Louisiana from Spain. Britain could prevent Napoleon from pocketing New Orleans, but she had not the strength to wrest it out of its American purchasers' hands, as the British discovered by trial and error in 1814.

This post–Revolutionary War international situation was a Godsend for the United States. It enabled her, for nearly a century and a half, to devote all her energies to the development of her own continent—all those energies, that is to say, that she did not spend on her Civil War. But international relations are kaleidoscopic. Each successive balance of forces is precarious and short lived. Before the close of the nineteenth century, Britain's singlehanded predominance in the world was being undermined by the rise of a united and industrialized Germany. By 1914, Britain's

predominance was already a thing of the past. In the First World War, Britain, France, and Russia combined were not a match for Germany. And Germany would not have been defeated either in the First World War or in the Second if the United States had not, each time, eventually thrown her by then enormous weight into the anti-German scale of the trembling balance.

In intervening militarily in both world wars, the United States was, I believe, taking action that was indispensable for the preservation of her own independence. If she had allowed Germany to win either war, Germany would have gathered into her own hands the control over the resources of the whole of Europe and Russia, and then surely nothing could have stopped Germany from subjugating the rest of the world, including the United States. The united resources of Europe are still the biggest potential power unit in the world. This is evident today, when western Europe is in process of uniting peacefully, by voluntary agreement, for the first time in her history. A union imposed forcibly by one European people on the rest always did, of course, arouse strong resistance, and always would arouse it. Yet, if Germany had won either war, she could have quelled the European resistance movements and then have used Europe's resources—including the colonial empires of the western European countries—as instruments for further conquests. The United States had, and still has, an Achilles' heel in Latin America. Latin American nationalism, social injustice, and natural resources are an explosive mixture. There is enough fissionable material here to blow up the whole Western Hemisphere. And a victorious Germany, once master of the Old World, could have stalked the United States by making her approach to the Western Hemisphere via the bulge of West Africa and the corresponding bulge of northeastern Brazil on the American side of the Straits of Dakar.

If I am right, the threat to the United States from Germany in both world wars was serious. Yet, as far as I can make out, the American people did not take this serious German danger to heart—not even after they had found themselves compelled, twice over, to go to war with Germany in order to prevent her from subjugating the world, including the United States itself. I find this puzzling, and I do not know what the explanation is. If, since the end of the Second World War, the American people had not taken the Russian threat to the United States seriously either, I should have concluded that American minds had been conditioned by the international security that the United States had enjoyed from 1783 to 1916. I should have supposed that this conditioning had gone so far that it had almost become a psychological impossibility for American minds to entertain the idea that their country's security might really be threatened. This theory, however, is ruled out by the sensitiveness and the vehemence of the present American reaction to the Russian threat. This makes the previous American complacency about the former German threat mysterious. For, in each of the two world wars, the German danger was, I should judge, much greater than the Russian danger is—or, at any rate, than it has been so far. The Germans are a great deal more efficient than the

Russians are, and therefore, when the German people dedicates its efficiency to the cause of war and conquest, the German danger for the rest of us is extreme. Thank goodness that, since the end of the Second World War, the Germans have been employing their immense practical abilities for peaceful and constructive ends. We may perhaps venture to hope that the Germans have been permanently cured of their militarism by their experience in the Second World War, as the French were cured of theirs by their experience in 1870. This lies on the knees of the gods, and, at the moment, I am concerned, not with speculations about the future, but with a matter of what I believe to be historical fact. My point is that apparently the American people did not take the German danger seriously in either of the world wars, and, if this is indeed a fact, it is one that has had unfortunate consequences for the United States and for the world.

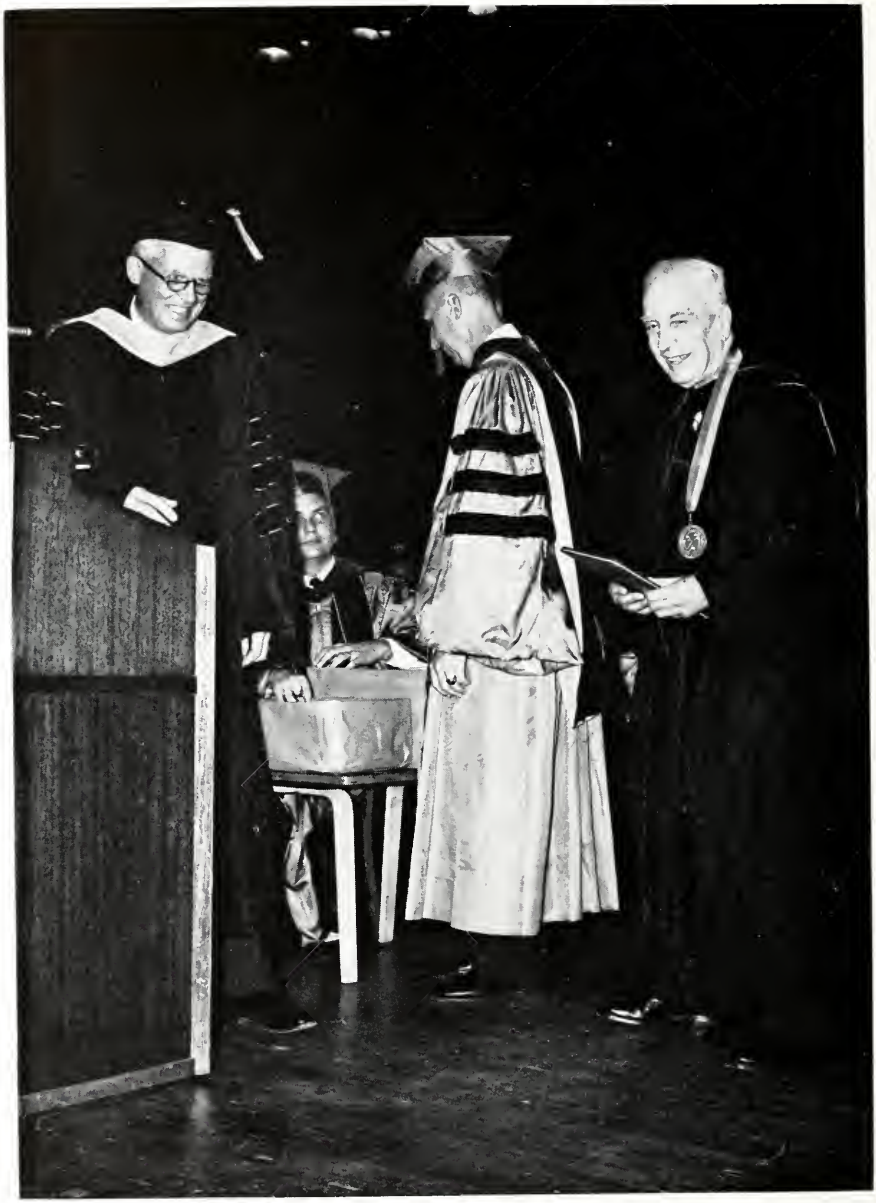
The immediate consequence was that, as soon as each world war was over, the American people found themselves wondering, each time, why they had taken the part that they had taken and resenting that they had done what they had done. After the first war they wondered why they had been at war at all. After the second war they wondered why they had not fought the Russians instead of fighting the Germans. Their action was now an accomplished fact. It could not be undone. But the United States could, and did, give vent to her postwar sense of disillusionment by taking a number of momentous steps.

Let me remind you of some of the steps that she took between the end of the First World War and the beginning of the Second. She refused to join the League of Nations, which had been founded largely on the initiative of the President of the United States. She throttled the flow of European immigration by passing the immigration restriction acts of 1921 and 1924. She tried to collect her war debts from those European countries that had been her wartime associates. And then, when the coming Second World War loomed up, the United States enacted the neutrality legislation.

These interwar American acts were all disastrous for Europe. The restriction of emigration to the United States hit Europe at the very moment when Europe needed this outlet more than ever before. Imagine the effect on those Greek emigrants to the United States, who were giving me such a glowing account of the United States in 1912, if they had been told that, within less than ten years from then, the American people were going to partially close down immigration for the future. My Greek informants' praises of the United States would, I believe, have died on their lips.

I have often thought, since, of the number of young Europeans who, in the interwar period, might have become good American citizens if they had been given the same chance as their prewar predecessors. The Germans, in particular, have usually made first-rate American citizens. I wonder how many young Germans who turned Nazi might have taken this happier alternative course if it had still been open to them. Von Ribbentrop, for instance, did tell me once that he had got into the United States

The Semicentennial Medal of Honor
and
Certificate of Merit



PROFESSOR TOYNBEE RECEIVES AWARD

Arnold Toynbee is shown immediately after receiving Medal of Honor and Certificate of Merit from President Pitzer. Professor Ronald L. Sass (*seated*) and Professor W. W. Akers are the Rice University Marshals who assisted in making the presentation.

Professor Toynbee Addresses Semicentennial Convocation

Rice
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Brand Blanshard
for Distinction in Philosophy

Hubert Evelyn Bray
for Distinction in Mathematics

Medal
of
Honor

Bertrand Harris Bronson
for Distinction in English Literature

James Henry Chillman, Jr.
for Distinction in Fine Arts

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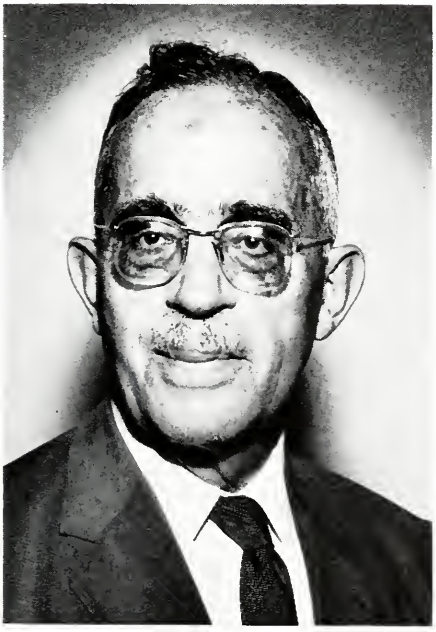
Semicentennial

William Maurice Ewing
for Distinction in Geology

Thomas Keith Glennan
for Distinction in Engineering

Medal
of
Honor

William Vermillion Houston
for Distinction in Physics



Louis Landré
for Distinction in Comparative Literature

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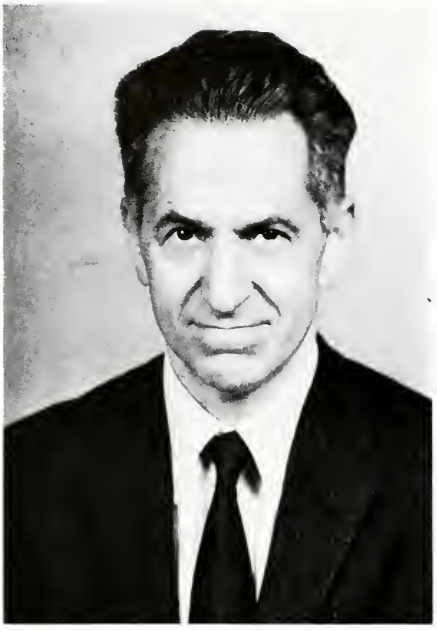
Jean Leray
for Distinction in Mathematics

Alan Dugald McKillop
for Distinction in English Literature

Medal
of
Honor

MARGARET MEAD
for Distinction in Anthropology

ALLAN NEVINS
for Distinction in History



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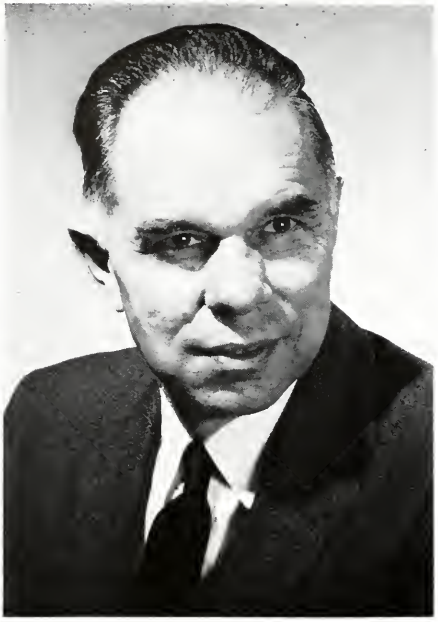
HENRI MAURICE PEYRE
for Distinction in French Literature

WILLIAM GROSVENOR POLLARD
for Distinction in Physics

Medal
of
Honor

Vladimir Prelog
for Distinction in Chemistry

John Lyon Reid
for Distinction in Architecture



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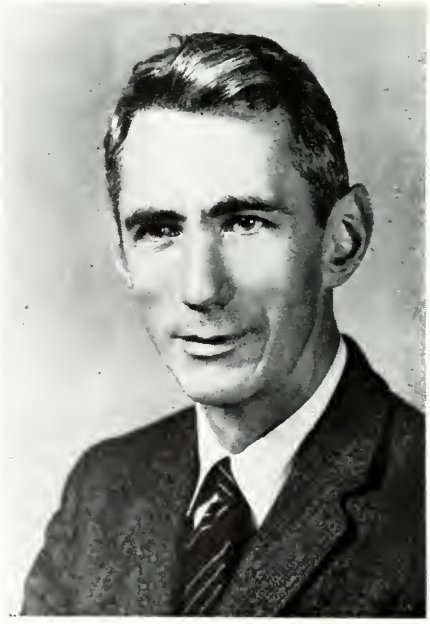
GLENN THEODORE SEABORG
for Distinction in Nuclear Chemistry



CLAUDE ELWOOD SHANNON
for Distinction in Applied Mathematics

Medal
of
Honor

Fritz Stüssi
for Distinction in Civil Engineering

Albert Szent-Györgyi
for Distinction in Biochemistry

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Sir Geoffrey Ingram Taylor
for Distinction in Engineering Science

Sir George Paget Thomson
for Distinction in Physics

Medal
of
Honor

Arnold Joseph Toynbee
for Distinction in History

Radoslav Andrea Tsanoff
for Distinction in Philosophy

Rice University Semicentennial Medal of Honor

JACOB VINER

for Distinction in Economics

HAROLD ALBERT WILSON

for Distinction in Physics

SAKAE YAGI

for Distinction in Chemical Engineering

on the quota, and had been taking out naturalization papers there, when the news of Hitler's coming into power in Germany tempted him to give that up and to embark on the evil career that led him, in the end, to the gallows. Numbers of other young Germans failed to get onto the quota and felt frustrated. Perhaps Hitler would never have come into power if he had not had, ready to hand, a host of these frustrated and therefore restless and bitter young Germans for him to use for his evil purpose. Perhaps Mussolini would not have come into power either. I remember how, passing through Rome at the end of the year 1920, I was disturbed at the sight of swarms of demobilized but unemployed Italian soldiers lounging about in the uniform of the so-called Guardia Regia. These were potential Italian emigrants to the United States, who actually became Fascists, instead, a year or two later. If these unfortunate, misguided young Europeans had had the opening in the United States that their parents' generation had had, I believe they would have led lives in this country that would have been useful to the United States and to the world, as well as to these young people themselves. In giving them the chance that she had given to their fathers, the United States would have been continuing to fulfil her own traditional ideal of being a Promised Land. Instead of that, these wretched young Europeans became criminals and cannon fodder.

This was one tragic sequel to the First World War. Its financial aftermath was another. If, in this war, there had been lend-lease instead of war debts, and if, after the war was over, there had been a Marshall Plan instead of reparations, the world's history in our lifetime might have taken a different turn.

The tragedy of what happened after the First World War was equalled by the irony of it. For the steps taken by the United States produced exactly the opposite results from those at which she was aiming. The American people were homesick for their prewar past. They were determined never to let their country be drawn into a European war again. They had allowed themselves to be entangled for once, in spite of Washington's warning. Their reaction was to cut themselves loose again from Europe, and this time to do this thoroughly. They were going now to insulate themselves financially and economically, as well as militarily and politically. The effect of their action was to make another world war inevitable, and this made it also inevitable that the United States should once again become a belligerent. This, too, was inevitable because, in the Second World War, as in the First, the consequence, for the United States, of maintaining her neutrality till the war had ended in a German victory would have been to expose United States security to a risk that the American people were not prepared to run. Therefore, once again, the United States was bound to intervene when it came to the point of either intervening or letting Germany win.

Though the United States was thus certain to intervene in a second world war if Germany were to start one, neither the American people nor the Nazis seem to have foreseen this. The American people believed that,

this time, they had made sure of being able to keep out. By refusing to join the League of Nations they had kept clear of political entanglements that might have involved them in war with Germany. By enacting the neutrality legislation they had insured themselves against the possibility of being drawn into war with Germany by economic entanglements with Germany's opponents. This was supposed, by one school of American historical thought, to have been the main cause of the United States involvement in the First World War. The Nazis, on their side, correctly interpreted these interwar American actions as being evidence that the American people were determined not to go to war with Germany again; but they shared the American illusion that the United States would actually find herself able to do what she wished. Both the Nazis and the Americans seem to have overlooked the truth that, in a world that is divided politically into a number of sovereign independent states, each of which intends to try to preserve its sovereign independence at all costs, this will, in the last resort, be the governing consideration for every country. Even the most pacific-minded people will go to war if and when it finds itself confronted with a choice between going to war and losing its independence.

If the American people had foreseen this from the start, perhaps they would have joined the League of Nations after the First World War and have made military alliances, of the NATO type, with the western European powers instead of enacting the neutrality legislation. If the Nazis had realized the same truth, perhaps Hitler would have refrained from going to war, even though the United States had taken the steps that she did take with a view to keeping out. If Hitler had recognized that the United States would not be able to keep out, however much she wanted to, he would surely have kept the peace; for a would-be aggressor does not launch his war of aggression if he knows in advance that he is bound to be defeated. Hitler, of course, made war in 1939 in the belief that he was bound, not to lose, but to win. And this belief was reasonable on the mistaken assumption that the United States would be able to keep out. Germany would have won the First World War if the United States had kept out of that, and she would have won the Second World War as well if, this time again, she had had only France, Britain, and Russia in the field against her.

The United States took momentous steps after the Second World War too. No more than seven years elapsed between the enactment of the United States neutrality legislation in 1939 and the proclamation in 1946 of the Truman Doctrine, placing Greece and Turkey under the United States aegis. Is there any other instance in history of such a dramatic reversal of policy within so short a span of time? Even after the United States had become a belligerent in the Second World War, she had refused to entangle herself in any military operations in eastern Europe and in the Levant—as if this was going to make any difference, now that she was thoroughly entangled with western Europe, northwest Africa, and the western Pacific. In still shunning entanglements in the eastern

Mediterranean, the United States was trying to cling to a last shred of Washington's policy. The neutrality legislation of 1939 had been a supreme effort to maintain that policy intact in an international situation in which it had become manifestly impracticable since 1916. Since 1946 the United States has thrown her time-honored traditional policy to the winds and has adopted a new policy that is the exact opposite of it.

In the past the United States sought to avoid clashes with other powers by drawing in her horns and withdrawing into her shell. Since 1946 she has risked clashes with the Soviet Union by rushing forward to meet and stop her adversary as near as possible to his frontiers and as far as possible from her own. Not only in Turkey and Greece, but in the offshore islands, in Laos, in Berlin, the United States has dug herself in at the very foot of the Communist world's ramparts. Before 1946 the United States shunned alliances; since 1946 she has been seeking them. During the interwar years, Britain and France longed wistfully for the unobtainable alliance with the United States—an alliance that would have been the one effective deterrent to a Germany that was meditating a war of revenge. Since 1946 it has been the United States who has been anxious to gain and keep allies, while Britain and France, in their weaker moments, have sometimes wondered whether their alliance with the United States is not a more dangerous entanglement for them than they can afford. Before 1946 the American people believed that the international power game was a crime and a folly that was peculiar to the depraved nations of the Old World. Today the United States is playing this very power game herself. She is playing it with all her might, and this on a world-wide scale. There is no patch of the habitable and traversable surface of the planet, however remote and however barren, that the United States does not now feel to be her concern if it is a question of forestalling Russia in gaining a foothold there.

The reversal of the United States foreign policy on the political and military plane has been extreme. The reversal of it on the financial and economic plane has gone to equal lengths. During the Second World War, lend-lease was substituted for repayable loans to the United States associates. After this war, when Europe's economic life was at a lower ebb than it had sunk to after the first war, the United States did not again leave this European wasteland to produce another crop of noxious political weeds like fascism and nazism. She launched the Marshall Plan. At her own expense, without asking for any economic return for herself, she gave the exhausted and impoverished European peoples the means of recuperating. The Marshall Plan is the cause of western Europe's present prosperity; and eastern Europe could have been proportionately prosperous today if Russia had not prevented the eastern European states that were under her domination from accepting an American offer that had been extended to them as well. Today, one of the most constructive of the economic and political movements that are taking place in the world is the movement toward European union. This is a movement that has no precedent in European history; and its origins, too, can be traced back to

the Marshall Plan. American aid stimulated the western European peoples that received it to co-operate with each other for using it to the greatest common advantage. I believe the temporary European organization for implementing the Marshall Plan was the germ of the permanent European union that is now coming into existence.

The contrast between the United States reactions to the two wars is extraordinary. Her reaction after the first was a desperate effort to retreat again into the isolation that she had enjoyed in the preceding chapter of her history. Her reaction since the second war has been a resolute acceptance of the hard fact that, in the world as it has now come to be, isolation is no longer possible. The American people have, in fact, recognized and accepted the truth that, for the United States, the age of isolation is now over. This change in the American people's outlook corresponds accurately to the change in their position in the world. It is, I should say, the most epoch-making event in the history of the United States since the achievement of independence.

How are we to appraise this stupendous change of orientation? Looked at from one point of view, it is a tragedy. The American people's immense, and immensely successful, exertions throughout the nineteenth century were largely inspired and stimulated by the ideal of building up in the New World an insulated Earthly Paradise, uncontaminated by the Old World's ancient evils. This long-cherished American ideal has now been proved, by merciless experience, to have been an unrealizable dream. The Old World, whose dust the Americans believed that they had shaken from off their feet, has closed in on the American New World and has engulfed it. The Americans have discovered that they have to reconcile themselves to living in the Old World after all. For any people, anywhere in the world, at any time, so complete a disappointment of such fundamental hopes and expectations would have been a tremendous ordeal. The shock caused by it is bound to be great. This is inevitably a painful episode in United States history, but happily it has another aspect besides the tragic one.

To be rudely awakened from an agreeable dream is a tragedy that brings a reward with it if one is able to rise to the occasion; and the American people have risen to this occasion, I believe. Being awakened means being recalled to realities; and after the second war the American people have done, I believe, what they recoiled from doing after the first war. They have now recognized the realities of their situation, and have accepted them; they have faced them clear-sightedly and resolutely; and, being Americans, they have taken action. Obviously, the United States action since the Second World War is not beyond criticism. No human action ever is. But, at least, the American people have taken note of their previous mistakes and have taken care not to repeat them. Such self-criticism and self-correction is all too rare in human affairs. When it is achieved, it is a sign of spiritual strength and maturity, and it gives promise of future success. For instance, the United States has not, this time, repeated, for herself and for Russia, the mistake that she made during the

interwar period for herself and for Germany. This time she has not allowed either herself or a potentially aggressive foreign power to be under any illusion about what the United States would do if this other power did launch a war. The United States has made it unmistakably clear that, this time, she not only would be a belligerent but would be at war with the aggressor from the start.

To be thus reinvolved in the international power game is, of course, a terrible plight to be in. It is doubly terrible when it is a disappointment of long-standing previous hopes and expectations. It is utterly terrible when it happens, as it has happened to the United States, at a moment when the invention of the atomic weapon has made the evils of war incomparably worse than they have ever been in the past. In such circumstances, it is only human that Americans should sometimes look back wistfully to the antediluvian age of isolation. This is human, but it is unprofitable, I think. Before one allows oneself to hanker after a lost isolation, there are two questions about it that one ought to ask and answer. The first question is: Was isolation ever a practicable policy for the long run? The second question is: Even if it had been practicable as a permanent policy, is it a good policy intrinsically?

I myself believe that the answer to both questions is a negative one. I believe that, from the beginning, the self-insulation of the United States was a wasting asset. By the time when Washington sounded his warning against foreign entanglements, the Industrial Revolution was already under way; and the Industrial Revolution, once started, was bound to result in "the annihilation of distance" and in the consequent transformation of the whole surface and the whole air-and-space envelope of this planet into a single arena for atomic warfare, if the international power game should ever take the form of war again. This is the most fearful situation in which we human beings have ever found ourselves since the date when we established our ascendancy over the other wild beasts. As we sit at the feast that modern technology has served up to us, another product of modern technology, namely the sword of Damocles, hangs suspended over our heads. Today the whole human race is exposed to this threat of self-annihilation, and in this age the American people could not have contracted out of this common human predicament, however desperately they might have clung to their vanishing isolation.

The second question cuts deeper. This question is whether it would have been a good thing for the American people to continue to enjoy a privileged position, supposing that this had been feasible. It might require some spiritual effort to give a negative answer to this question, too. Yet I fancy that this is the answer that most Americans would give it today. The price of being privileged is to be lonely and unloved, and this is too high a price to pay for anything. Privileged persons of nations cannot even love or admire themselves. At any rate, they cannot do that with any convictions if their ancestral religion is Christianity. What Christ stands for is God's deliberate renunciation of His privileged aloofness. Christ stands for a voluntary participation in the suffering that is the creation's

common lot. If Christianity means anything to us, it means that we must try to follow this example as best we can.

Since we are only human, our best efforts will be likely to fall far short of the Christian standard. Like the American missionaries in the nineteenth century, the whole American people in our postwar age has deliberately stepped out of its transatlantic earthly paradise and has re-entered the Old World. So far, so good. But there is a difference in the objectives. The missionaries re-entered the Old World in order to propagate Christianity there. The present generation of Americans has re-entered it in order to check the propagation of communism there. Both objectives are legacies from the American people's European past. "Caelum, non animum, mutant qui trans mare currunt." America's European heritage is, however, a mixed bag. The power game, as well as Christianity, is part of it. The Pilgrim who made the passage of the Atlantic believed that he had put off the Old Man in taking leave of Europe and that he had put on the New Man in setting foot on America's virgin soil. The reversal of the United States traditional foreign policy in our day has shown that the Old Man had not really been put off; he had merely been put to sleep; and now this sleeping spirit in the American soul has been sharply reawakened.

Who is it that has reawakened it? What Hitler failed to do to America was done to her by Stalin. Hitler presented a threat to the United States without making her aware of the peril that she was in. Stalin made her intensely alive to the peril of his threat, though, as I, for one, see it, the postwar Russian danger for the United States was not, and is not, comparable to the previous German danger in real magnitude. Why, then, have the American people taken the Russian threat so much more to heart? What accounts for the difference between the respective American reactions to these two threats?

The answer to this question is not to be found, I believe, in any differences between Nazi Germany and Communist Russia. The differences between these two totalitarian powers are many and great and important, but I do not believe that the explanation of the change in the American people's attitude lies here. I believe it lies in a change in the American people's own attitude and outlook.

One cause of the vehemence of the American people's reaction to the Russian threat is simply the fact that, for some reason, it was Stalin and not Hitler whose aggressiveness made America aware that her traditional policy of self-isolation was now bankrupt. One may not be sorry to have been awakened from a dream—painful though the awakening may have been—but one does not feel grateful to the person who has jolted one back into a wide-awake consciousness of the real world. This is a well-known story. The patient is seldom grateful to the psychotherapist by whom he has been cured. There is, however, perhaps a second cause of the present violence of the American reaction to the threat from Communist Russia. Let me put this possible other cause to you tentatively. I am conscious that here I am treading on particularly delicate ground.

What I have in mind is a change which I fancy that I have observed in the American attitude to life.

The American people started life as a revolutionary people, and this long before they won their political independence in the Revolutionary War. The initial act of leaving an ancestral home in Europe and making a fresh start in the New World was a revolutionary step, and some of the first settlers on North American soil were people who had made their European home too hot to hold them by taking a previous revolutionary step. They had broken with their European native country's local established form of Christianity, and one of their motives in crossing the Atlantic was their wish to be free to follow their own nonconforming Christianity in their own way. The American people thus have revolution in their blood, and this is their own traditional picture of themselves. Moreover, this American self-portrait used to govern the American people's attitude toward their fellow human beings in the Old World. American policy of noninvolvement did not carry with it a suspension or repression of sympathies and antipathies. Even in their most isolationist moods, the American people have been hostile to Old World tyrants and oppressors and have been sympathetic to these tyrants' victims.

No doubt, the American people see their present quarrel with Communist Russia in these traditional terms. A belief that, in opposing Communist Russia, they are taking the traditional American stand is, I fancy, one of the convictions that is giving the American people confidence in the righteousness of their present-day cause. The Communist regime in Russia is unquestionably oppressive and tyrannical, but that is not all that there is to be said about it—as it *was* all that there was to be said about the Nazi regime in Germany. Communism is a tyranny that stands, paradoxically, for economic and social justice as against vested interests. Its performance evidently falls very far short of its principles; indeed, it sometimes seems positively to belie them. Yet these principles remain inscribed on Communism's flag, and, even if the Communists are untrue to them, the principles themselves are a potent force in the present-day world.

They are potent because they express the aspirations of the huge depressed majority of the human race. This majority cares, I believe, for equality more than it cares for liberty; its objectives are economic realities, not political abstractions. It wants the bare necessities of life, because it lacks even these. It is becoming aware that modern technology can supply its elementary needs, and it is therefore becoming impatient of its age-old poverty. In the eyes of the poverty-stricken mass of mankind, the enemy is the vested interests of the rich minority. And this brings us to the difficulty in which an undiscriminating opponent of communism finds himself. In opposing communism intransigently, it is difficult to draw a line between opposing its tyranny and oppressiveness and opposing all its works and all its principles alike. It is therefore difficult to avoid slipping into the position of opposing economic and social justice and championing vested interests. Anyone, however, who does slip into this position may find that, without intending to, he has alienated the poverty-stricken

majority of mankind. This majority knows little about the Communist and anti-Communist ideologies and perhaps cares less about the little that it does know. But it cares immensely about the social justice for which communism professes to stand. For this reason, an undiscriminating attack on anything and everything that communism stands for is likely to have the incidental effect of making the mass of mankind feel a solidarity with communism. It may, in fact, incline them to come down on communism's side.

Therefore, I should say that when we, the rich minority, are opposing communism, we ought, all the time, to be searching our hearts. We ought to make sure that we are opposing communism for the right reason only. The right reason for opposing it is the reason for which we opposed the Nazis. It is right to oppose tyranny and oppression, wherever we encounter them. We must always remember, however, that we are exceptionally rich, and that we are therefore exposed to all the temptations that riches bring with them. We must remind ourselves of the repeated warnings in the Gospels about the snares in the path of the rich and about the special difficulties in the way of their finding salvation. If we ever catch ourselves opposing communism, not in defense of its victims, but in defense of our own vested interest in the preservation of our own wealth, we ought to take that as a danger signal and to draw back. Is our island of prosperity in the West to be a Promised Land for the poverty-stricken majority of mankind? Or is it to be a privileged minority's closely guarded preserve? Have we ascertained what is the genuine answer to this question in our heart of hearts? We cannot afford not to search our hearts for the true answer. Whatever the true answer may turn out to be, it will be decisive for the future of the United States and the West and the world.

I have mentioned the dramatic *volte-face* in the foreign policy of the United States. Since 1946 she has veered round from her traditional policy of keeping out of the international power game to a policy of involvement in it up to the hilt. There has, I believe, been a no less extreme and dramatic change in the domestic social structure of American society. The Constitution, as I read it, was intended to serve a community of citizens who were their own masters in every field of activity—in the economic and religious fields, for instance, as well as in the political field. The American community that was in the Founding Fathers' minds was a community of farmers who owned their own land, of traders who owned their own store and stock, and of professional men who were self-employed. How many of us are still self-employed in our present-day Western world? We have bigger real incomes than our forefathers, but these come to us, nowadays, largely in the form of wages and salaries. In other words, we have been buying our present prosperity by trading away some of our ancestral freedom, and I do not believe that this has been a good bargain.

When one adds these changes, within the last half-century, in the United States domestic life to the contemporary changes in her relation to the rest of the world, the total amount of change is staggering. In this flux, is there any guideline to which we can hold on?

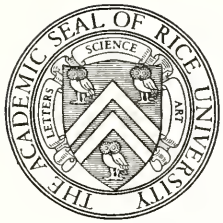
Well, I come back, in conclusion, to my first introduction to the United States, which I described at the beginning of this talk. What was it, in 1912, that made those Greek emigrants to the United States, whom I met in their home villages, so enthusiastic about the country of their adoption? The thing about the United States that had struck their imaginations and had won their hearts was the American people's generosity. Here was a people that had crossed the ocean to carve a new world out of the wilderness; and, when, by the pioneers' hard labor, the wilderness had been transformed into an earthly paradise, the people who had created this paradise were not trying to fence it in as a close preserve for themselves. They had thrown it open for other needy Europeans to come and share it with them. Every Greek immigrant had tested this American generosity by personal experience. His praise of America was praise of this American virtue in particular. I also come back to those nineteenth-century American missionaries. Their treasure was a spiritual one, and they were ready to renounce the material treasure that was within a nineteenth-century American's grasp in order to share their spiritual treasure with their fellow human beings in the Old World.

This American generosity is, I believe, characteristic of the American spirit. Anyway, it is a golden thread which keeps on shining out in the lengthening skein of America's destiny. It shone out in Marshall aid to Europe; it is shining out again in the aid that the American people are giving today to Asia, Latin America, and Africa. Here, I should say, is something in American life that has suffered no change within these last fifty years. Here, as I see it, lies the hope for the future of the United States, and therefore also for the future of the world.

With the conclusion of the address, the assemblage sang the Rice alma mater, "For Rice's Honor." Professor Nielsen then pronounced the benediction:

The Lord bless us and keep us.
The Lord make His face to shine upon us and be gracious unto us.
The Lord lift up the light of His countenance upon us and give us peace. *Amen.*

The recessional was made while the Rice Band played Gounod's "Marche Pontificiale."



Rice University Associates

DINNER

in honor of

SEMICENTENNIAL VISITING SCHOLARS

Seven-thirty o'clock
Thursday, October the Eleventh
Nineteen Hundred Sixty-two
Grand Ballroom, Rice Hotel
Houston, Texas

Rice University Associates Dinner

THE RICE UNIVERSITY ASSOCIATES on October 11, 1962, were hosts at a dinner in honor of the Semicentennial visiting scholars. A total of 950 persons attended this dinner, held in the Grand Ballroom of the Rice Hotel at 7:30 P.M. that evening. Two long head tables provided seating for the visiting scholars and their wives and for the other Semicentennial honorees as well as for President and Mrs. Pitzer, members of the Board of Governors, and other dignitaries. Mr. Harmon Whittington of the Board of Governors presided.

Following the meal, Mr. Whittington made a brief introductory statement of welcome:

I want to thank you Associates for such a large and enthusiastic turnout this evening on this momentous occasion and to welcome particularly the new Associates. We hope you will enjoy it. May I also remind you that we want all of you to take a part in Rice during its next fifty years.

Now, on behalf of the Associates, I welcome all the distinguished guests who have come from far and wide, and some from abroad, to be with us and take part in this Semicentennial celebration. Some of you attended the first Convocation, held in 1912, and we are delighted to have you with us again.

While Rice is young, as great universities go, we are proud of our accomplishments to date. We expect to accomplish greater things before our hundredth anniversary rolls round, and we hope all of you will be with us on that occasion. Mrs. Whittington and I expect to be here.

We have all the ingredients for future progress. It is like baking a good cake or mixing a good martini—but I prefer to stick to martinis, as I know more about them than about baking cakes. To have a good one, you must have the right kind of ingredients. In our case, we have a great school of science (used in the broad term), but that will not do it without a proportionate amount of the humanities, and then a reasonable portion of athletics. Then they have to be stirred lightly but firmly. In Dr. Pitzer, we think we have the man who can stir it just as it should be done.

We Associates hope to play a part in this development. We are now only about eight years old, but we hope to have a semicentennial too.

I am now going to turn the meeting over to our stirrer, Dr. Pitzer.

President Pitzer acknowledged Mr. Whittington's remarks and then presented each of the guests at the head table. He then introduced the speaker of the evening, Dr. Glenn T. Seaborg, Chairman of the United States Atomic Energy Commission. Dr. Seaborg spoke on the "Partnership of Science with the Arts and Humanities."

It may come as a surprise to many of you here this evening when I tell you that there are a number of "revolutionists" in our midst. These people are hard working and dedicated to their revolution. The one difference might be that they are unaware of their revolutionary tendencies. The group to which I refer, of course, consists of scientists and engineers in our midst who are now fomenting the third revolution in our nation's history—the Revolution of Science.

The revolution inspired by our Founding Fathers gave birth to our nation; the Industrial Revolution, inspired by man's inventive spirit, gave us a place among the nations of the world; and the third revolution—the Revolution of Science, inspired by our educated men and women—is maintaining us as a leader of nations.

During the last several decades, and especially the last two decades, this nation and the world have witnessed a remarkable expansion of knowledge. This knowledge has been, and is being, transformed into the outlines of a new and revolutionary society. In these decades man has made more progress in science and technology than in all previous history, and further evolution in these pursuits during the next few decades will again exceed the developments of all history prior to 1962.

I should like to tell you my views on the impact this new force—this third revolution—has had on your lives. Let me review some of the scientific advances that have occurred over the past three decades, most of them during the lifetime of those here this evening.

In *physics*, more than 90 per cent of all the elementary nuclear particles were identified. Nuclear fission and nuclear fusion, the sources of nuclear energy, were discovered. The major portion of our knowledge of the solid state of matter, as well as of plasmas and other high-temperature phenomena, is the result of the efforts of the last thirty years. In *chemistry*, a whole realm of plastics and other synthetic products has been developed in these three decades. The chemical processes associated with the photosynthetic cycle in plants have been largely unraveled by research in these years. In *biology*, enormous progress has been made toward understanding the life processes at their basic molecular levels, and, in *medicine*, we are beginning to attack disease at its fundamental chemical foundations.

Much of the impact of these scientific advances results from the technological applications that have accompanied them and with which each of us has experience in our everyday lives. For example, in *electronics*, there are transistors, television, and radar; in *agriculture and gardening*, insecticides, weed-killers, and the improved fertilizers that permit the home gardener to have a green lawn all season long with only one appli-

cation; in *medicine*, the sulfa drugs, penicillin, streptomycin, aureomycin, radiation diagnosis and therapy, and the many other seemingly miraculous drugs and therapeutic and surgical procedures; in *business*, a spectrum of automatic processes, the photocopying machines, the computer, and even the vending machine that can make change of a dollar bill; in the *home*, color photography, hi-fi, the fabrics woven of the new miracle fibers that will not spot, stain, or wear out, and even such wonders as the plastic baby bottle.

Let me give you a final example, one near and dear to me. During the early work on gaseous diffusion in the Manhattan Project, it was necessary to develop inert materials to withstand the corrosive attack of uranium hexafluoride. One minor achievement of the effort was the development of polytetrafluoroethylene—or "Teflon." Of course, today, there is no end to the application of this family of materials. In fact, each time I read an advertisement for one of the new Teflon-coated frying pans or cooking utensils, which permit the cooking of foods without grease or fat—an important matter to the seemingly three-quarters of our citizens who are on a diet—I cannot help thinking that science, and nuclear energy in particular, is, in a roundabout way, helping us win the "battle of the bulge!"

I could go on—for much longer than you would probably care to listen—enumerating other benefits that technology has provided for us during these decades. But what will the future hold? This question has always challenged man. In fact, to attempt to forecast these future advances requires a certain degree of audacity, although I believe somewhat less courage than it does to speculate on the stock market. A portion of the future is already clear. Our ventures into space are but a beginning. In the next few decades man will travel to the moon and the planets; an entirely new frontier will be opened to challenge mankind. World-wide radio and television broadcasts from satellites in planetary orbit direct, and without relay, to homes everywhere will soon be a reality. The cure of cancer, mental illnesses, and other unconquered diseases may become possible. The life span of the average man and woman will be increased through biological and medical advances. New sources of power will be developed. Already the energy generated by nuclear fission appears to be on the verge of economic feasibility. Sometime in the future, controlled thermonuclear fusion may also become a reality, which would mean that we could use the virtually limitless water of the oceans as fuel to generate heat and electrical power.

These prospects of science and technology will continue, at an accelerating pace, the rapid social, political, and economic evolution of a society constructed on a scientific base.

This evening I should like to focus my remarks on influences of science that are not as obvious and that do not have as direct an effect upon our daily lives. I refer specifically to the impact science has had upon the arts and the humanities. New techniques of science have enormously enriched our understanding of cultural history—our knowledge of our origins, our

evolution, the development of social systems of growing sophistication, and the triumphs of men in the arts over the centuries. This understanding is an invaluable contrapuntal contribution to the material revolution that science is bringing to the modern world.

In *archeology*, the use of the radioactive carbon-14 dating methods, discovered and perfected by Professor W. F. Libby, has given us new standards of accuracy in cases where previously one might have been forced to guess. By using these sensitive analytical methods, scientists can give a fairly accurate date to the products of man's activities—charcoal from his fires, pieces of leather from his sandals, even pieces of linen from the wrappings of the Dead Sea Scrolls. Using these methods, we now know that the great monuments at Stonehenge in England were erected some 3,500 years ago. We have a new insight into the magnitude of the Stonehenge monuments as an engineering problem, for geologists can say that the deposit of rock from which the monuments could have been made is in Wales—180 miles away. Some of these individual stones weigh as much as twenty-eight tons.

Hammurabi, the king of ancient Babylon, whom we know as the author of the code of laws that bears his name, was probably the first ruler who published the laws of his country and assigned definite punishments to those who broke them. The Code of Hammurabi was carved on great stone slabs and erected in every city and village of the land. By dating a house erected in his reign, we now know that Hammurabi, the Law Giver, ascended his throne in about 1750 B.C. We can also tell the approximate dates of many of the other events of Babylonian history.

We have also learned that Jericho may be one of the oldest cities in the world. Parts of the deep ruins of the city date from the period 8000–6000 B.C., when the Ice Age had not yet ended in northern Europe.

Radioactive dating is reasonably well known by now and has been invaluable to the historian in clarifying many ancient and puzzling questions. It even gives us a new sort of yardstick by which we can measure how fast and how far we have come in our ascent from the swamps and the caves of our remote ancestors. Professor L. S. B. Leakey has recently found the remains of a primitive, apelike creature in the Olduvai gorge in Tanganyika, East Africa. Although these were primitive creatures, they had already learned the fundamental art of making crude tools of flint. By the use of another radioactive-dating method, measuring the rate at which potassium-40 slowly turns into argon-40, scientists G. H. Curtis and J. F. Evernden at the University of California have suggested that these early men hunted and lived and died over 600,000 years ago. More recently, some bones from this region have been assigned an age of 1,750,000 years, which could push man's ancestry farther back than ever before. And, just recently, we learned from news reports that Leakey, with the help of radioactive dating by the Berkeley scientists, may have uncovered a near-ancestor of man in Kenya, more manlike than apelike, 14,000,000 years old. All the questions about these dates have not been resolved as yet. But it is humbling to ponder the possibility that our span

of recorded history in the usual sense is only a little more than one ten-thousandth of the entire length of time that men, or manlike creatures, have walked on the face of the earth.

There are also important applications of science to the arts. Neutrons from an atomic reactor can be used to make radioactive some materials that exist in such small quantities that we cannot detect them by ordinary means. This method is called neutron-activation analysis, and it permits detection and measurement of otherwise immeasurable substances. Recently, scientists at the Brookhaven National Laboratory, a laboratory operated by the Associated Universities, Inc., for the Atomic Energy Commission, have been working with this new and powerful method to study the chemical composition of ancient pottery from the Mediterranean and from South and Central America. The great advantage of this method for the archeologist is that it is nondestructive, that is, the original artifact is still preserved in its original form and beauty. One of the fascinating things learned from this research program was that fraud was not exactly unknown in the ancient world. Pieces of pottery made in an ancient city of Arezzo, Italy, were very popular in the Roman Empire because of the high quality of the workmanship. The potters even marked their ware in the same way manufacturers trade-mark their goods today. Neutron-activation analysis shows that much of this ancient pottery must have been made elsewhere and given a false trade-mark, since the chemical composition of the clay is sufficiently distinct to establish clearly that it was *not* made in Arezzo.

Analysis of Macedonian coins of about 400 B.C. has disclosed a possible and curious double standard in fiscal affairs. Two very similar varieties of silver coins were struck in this period. One variety contains less than one-fourth of 1 per cent copper—the others contain from 5 to 24 per cent copper, and, because of their similarity in other respects, there is a suspicion that the higher alloyed varieties may have been used to deceive the unwary or unknowing.

Neutron-activation analysis is now being used in two unusual historical investigations in Europe. King Eric XIV of Sweden lived a rather violent life, even for the busy days of the sixteenth century. He imprisoned his half-brother John, imprisoned and executed many members of his nobility, proposed marriage to Elizabeth I of England, and finally became violently insane. There was a rebellion. Eric's half-brother took over the throne as John III and imprisoned the former king. Several years later, Eric suddenly died in prison, following, it is said, the consumption of a dish of pea soup. Recent neutron-activation studies of the remains of King Eric give support to the theory that the soup may have contained substantial amounts of mercury.

For many years, questions have been raised about the cause of the death of the Emperor Napoleon I on the island of St. Helena. Although he was officially reported to have died of cancer, some have interpreted the symptoms of his illness and death as being due to other causes. Now if we want to think of it in terms of a historical detective story, we can say

that the Case of the Imperial Prisoner has recently been reopened by the discovery of new evidence. Neutron-activation analysis has been carried out on a lock of hair reportedly taken from Napoleon's head immediately following his death. The hair contained thirteen times as much arsenic as is normal for human hair. This, added to other symptoms of his final days, has raised an inference that Napoleon may have suffered from arsenic poisoning.

There are numerous fascinating aspects of the interactions between science and history and the arts. It is now possible to make sensitive measurements of the magnetism of the soil. The ancient Roman who built a fire, dug a hole, or otherwise disturbed the soil changed the magnetic field of the ground. Recently, by careful measurement of the magnetic field with these devices, dozens of ancient Roman pottery kilns were located in a section of England where bulldozers were about to break ground for a new road. This method of detection is also being used today to locate tombs in northern Italy left by the Etruscans, who occupied that country before the Romans.

Aerial photography has located many ancient ruins not visible from the ground and has identified them even when buried under fields which have been under cultivation for hundreds of years. An old wall or ruin, even underground, changes the amount of water available to growing plants just enough so that there is a difference in color or shade, to which the eye of the camera is sensitive. Cities of almost forgotten times have thus been found in a number of places in the world.

Another new device called the electron beam microprobe analyzer is giving unexpected aid to the student of art. This device can take a microscopic sliver, perhaps no larger than a human hair, and scan it with a fine needle beam of electrons. Under these conditions, the atoms present emit their characteristic X-rays and give a chemical analysis of the materials. In this way, the scientist can tell the art expert what kind of pigments were used in making the painting. If a painting, supposedly dated 1657, contains a pigment that was not discovered until 1850, this is a fact that a collector or museum management would certainly be interested in knowing.

X-ray fluorescence spectrometry is a method of analysis which is also of particular interest to the archeologist and art investigator, since it is sensitive and nondestructive and can tell what elements are present in the sample examined. It has been successfully used to analyze and identify the glazes of old ceramics and has had one other unusual application. The skull and jawbone of the Piltdown man had long been an object of suspicion and irritation to many scientists, since it just did not fit most of the rest of what was known about ancient man. One of the final contributing bits of evidence that established the Piltdown as a complete fraud was evidence from X-ray fluorescence spectrometry that the brown coloration of the skull was not a result of staining by iron in the water, as originally claimed, but was the result of artificial treatment of the

bones with chromic acid. So Piltdown man has been removed both from the museums and from the family tree.

One of the most important periods in man's history was his change from hunting and food-gathering to the settled life of farming. Experts in botany and archeology, working together, have shown that several well-known plants were first domesticated in the Near East nearly 9,000 years ago. These scientists have traced the origin of our domestic wheat and barley to grasses which still grow wild in the hills in the Lebanon area.

I might mention in passing that even such a technical advance as the invention of the aqualung has had its effect on our culture. In addition to making transient additions to our intellectual life—several television programs, for example—the aqualung has made it possible for us greatly to extend our knowledge about the history, commerce, and ways of life of many ancient peoples, particularly in the region around the Mediterranean. We have found everything from olive pits and wine bottles in the crew's quarters of an old sunken ship to new evidence of colonial trade that gives us a better understanding of the economic basis of early competition between different countries. It may not be, as some people think, that it was Helen's face that launched a thousand ships to start the Trojan War; it may have been simply an economic struggle for control of the valuable trade route to the Black Sea. Thus, new scientific tools extend our insight and understanding of the ancient roots and patterns of life.

In other fields, it is interesting to note that many people are now working on machine translation of one language into another. A massive assault is being made on the philosophical and analytical problems of linguistics—and people are already learning, via computer, many new things about the structures and interrelationships of different languages.

We should also mention the importance of modern technology in making art available to all by means of color photography, the motion picture, high-fidelity tapes and records, and books. A few generations ago, art and fine music were largely confined to the gallery and the concert hall; today, anyone can bring a symphony orchestra or fine art reproduction to his living room, and we take it quite for granted.

Another important field in which the scientist is aiding the artist and the collector is in the highly significant one of the conservation of art. The paintings of three hundred and more years ago, the sculpture, the tapestries, the manuscripts, which are part of our priceless and irreplaceable heritage—all are subject to inevitable erosion and deterioration. Light, weather, humidity, mold, insects, corrosive atmospheres—all take their toll; in other words, "the rust and moths do corrupt." Scientists are helping advise how conservation may be done best. Co-operation in this work includes some of the work done by the same scientists at the Brookhaven National Laboratory that I have already mentioned. They recently discovered the cause of the decay that was destroying some famous Renaissance fresco wall paintings by Giotto in a chapel in Padua, Italy. Orig-

inally, the plaster surface of the wall was largely calcium carbonate. Over the past century, contamination of the air with small amounts of sulfuric acid from industrial processes had slowly been changing the carbonate to calcium sulfate, which has a different crystal form, and, as a result, the overlying paint was flaking off. Knowing the causes, we now hope that use of modern methods of air conditioning in the chapel will remove the contaminants and arrest the decay.

Art conservation can take place on the grand scale, too. An example is the treatment of Gutzon Borglum's gigantic sculptures at Mount Rushmore in South Dakota. There, the famous stone heads of our honored Presidents have recently been treated with a silicone water-repellent to prevent the penetration of moisture, which could eventually cause their weathering and decay.

I cannot resist including, as a final example of the interaction of science with other fields, the effect the "third revolution" may have upon lawyers. A competent practicing lawyer needs a large library, and the field is growing at a rapid rate. I can conceive that in a decade or two every lawyer will have to introduce computer operation into his practice. By that time, it will probably be necessary to store in the vast and efficient memory of a computer all the necessary legal knowledge and reference material that the practicing lawyer of the future requires, so that he may quickly and conveniently find a particular case or earlier pertinent decision to which he may need to refer. To utilize this computer efficiently, most lawyers may even have to develop some basic personal competence and understanding of computer operation. Of course, this is not to say that most legal firms will not solve the problem by hiring trained computer operators, but the computer operator cannot be expected to bridge the gap between the computer and the law; rather, the task will be largely the lawyer's.

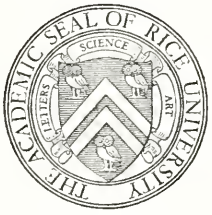
As a concluding thought to my remarks this evening, I should like to point out one fact—a fact that I personally consider of tremendous importance. Just as the archeologist, the artist, the historian, the lawyer, and many other nontechnical people must learn the rudiments of science and technology in order to cope successfully with their own disciplines—disciplines that have become affected by the progress of science—so it will be necessary for each citizen in this country to become familiar with, and to gain some basic understanding of, science and technology, if he or she is to contribute successfully to our society and to the world. The third revolution—the Scientific Revolution—will continue to change our country. To keep abreast of this wave, an informed citizenry is essential.

Upon the conclusion of Dr. Seaborg's talk, Mr. Whittington expressed his appreciation for his remarks and declared the dinner over.

The Association of Rice Alumni

HOMECOMING

1962



CELEBRATING RICE'S 50th ANNIVERSARY

The Annual Homecoming Dinner

THE ASSOCIATION OF RICE ALUMNI held their Homecoming a few weeks earlier than usual in order to make it a part of the Semicentennial observance. The opening event was the annual Homecoming Dinner, which likewise served as the closing activity of the Semicentennial Academic Festival. The Faculty, the delegates from other institutions, and the distinguished Semicentennial speakers still present were guests of the Association at this dinner, held in the Grand Ballroom of the Rice Hotel at 7:30 P.M., Friday, October 12, 1962. Approximately 750 persons were present.

President Willoughby Williams of the Alumni Association welcomed the guests and then introduced Cornelius O. Ryan, who served as toastmaster. Mr. Ryan presented the Reverend Leslie LeGrand, who gave the invocation.

Following the meal, Mr. Ryan introduced the distinguished guests at the head table and many of the distinguished visitors in the audience. Among those present were President Arthur S. Flemming of the University of Oregon and the Oregon Secretary of State, Howell R. Appling, Jr., a Rice graduate of the Class of 1941.

The Association then presented handsome framed scrolls to its honorees for the occasion. The first award went to Professor Emeritus and Mrs. Lewis B. Ryon in recognition of their gift of $750,000 to the University for the building of a civil engineering laboratory and for the many years of service by Professor Ryon as a member of the Rice Faculty. The second award was made *in absentia* to Mr. Lamar Fleming, Trustee Emeritus, who recently retired from the Board of Governors, where he had played an important part in the development of the University. Because of Mr. Fleming's illness, the award was accepted by Mrs. Samuel N. Sprunt, his daughter. Mr. Gus S. Wortham, also a Trustee Emeritus, received a similar award in recognition of his years of service on the Board of Governors and the active part he had taken in University affairs.

The toastmaster then presented the speaker of the evening, the Reverend William Grosvenor Pollard, Episcopal minister and Director of the Oak Ridge Institute of Nuclear Studies, who received his doctor's degree in physics from Rice in 1934. Dr. Pollard was the recipient of the Rice Semicentennial Medal of Honor at the Convocation on October 11, 1962. His address follows:

Each one of you must sense something of what it means to have been selected from among all the alumni of our beloved University to speak at the Alumni Banquet on this occasion—the Semicentennial Celebration of the founding of Rice University. It would not be possible to honor more highly an alumnus, and I am at the same time profoundly grateful to you for such a privilege and deeply sensible of my own inadequacy for so important an assignment.

I am struck by the fact that thirty of the fifty years in the history of Rice have elapsed since I entered here in the fall of 1932. This gives me a vantage point, which not too many of the total body of alumni can share with me, from which both to view the accomplishments of the past half-century and to look forward to our hopes for the remainder of the centennial. I am already an oldster in the Rice family.

Now the thing that strikes me most about this is the increased appreciation which comes with years of separation from one's alma mater. I appreciated Rice, to be sure, even in the year of my graduation. But I could not understand then, as I now do, all that I owed to her. Then it was too good to be through with school at long last. There was too much excitement about starting out fresh in a new assistant professorship in a university to look back on the past. At such a stage, the future beckons too enticingly to allow any appreciable reflections on the experiences of the immediate past.

Now, however, after twenty-six years of separation, I have found much time to reflect. More and more as the years have gone by it has been borne in upon me what a treasure my university years have been for my own life. The older one gets, the more he realizes in retrospect how much of his own discipline of mind, integrity of thought, and passion for excellence derives directly from those formative years. How vital it is to the welfare of our society and nation, to the maintenance of our culture and civilization, that such institutions as this be kept strong and flourishing! Every one of us who has had the choice opportunity of a Rice education has been deeply marked and formed by that experience. None of us here tonight would be at all what we are apart from our years at Rice. At this turning point in her history, we should all acknowledge our personal responsibility for seeing to it, out of the abundance that has come to us through our university education, that Rice remains strong and vigorous and equal to the opportunities and challenges which now face her. We alumni know best from our own personal experience how precious a thing, in the whole corporate life of humanity, is an institution of the

quality and caliber of Rice. Let it not be for any failure of ours that she lacks the resources she needs to continue to fulfill her role!

Vast changes have come upon our world in the years since the close of the Second World War. Rice, in common with other universities, finds herself in the grip of these changes and of the enormously complex problems which come with them. It is well, as she crosses the threshold into the second half of her centennial years, that we identify some of these problems and face them squarely. Great wisdom will be required for coping with them, and the degree of success which our university achieves in meeting their challenge will in no small part be a measure of her greatness.

One of the most crucial problems of our time is the enormous productivity of research, particularly in the sciences and technology. Each of the older established scientific journals now bulges with papers, and each year sees the establishment of a number of new journals. In addition, the many government laboratories add each year tens of thousands of scientific reports containing valuable new technical data to the rapidly swelling flood of published literature. In the face of this proliferating mass of new knowledge, the individual investigator has been forced to narrow ever more and more his field of interest. So far, no alternative has developed for him. There are real limits on the total volume of reading with effective assimilation that any one individual can regularly maintain in addition to his own research. Only by narrowing the range of his research interests to such a point that the problem of keeping current in his field becomes manageable can the individual maintain adequate standards of excellence and competence in his own work.

For the university as a whole, these pressures toward increasing specialization are leading to an ever accelerating fragmentation of knowledge. The problem is a grave one, not only for our universities and colleges, but for science as a whole. Even the direction in which a solution lies is obscure at present. Perhaps it will emerge from the several scientific centers for data accumulation, processing, and evaluation which have developed in the last decade at the Bureau of Standards, national laboratories, and elsewhere. It may be that the entire scientific community is becoming organized into a hierarchy involving not only those who carry out research directly but other scientists whose function it is to collect, process, and interpret data from many research centers. Dr. Alvin Weinberg, of Oak Ridge, in his capacity as chairman of a subcommittee on scientific information of the President's Science Advisory Committee, has recently completed a study of this very problem as it relates to government research. It is his conclusion that such a reorganization of scientific research is essential for the welfare of science. But, in whatever direction the solution may lie, it seems certain that for Rice as well as other universities this problem will be a center of major concern during the next fifty years. Imaginative approaches grounded in a deep understanding of the nature and mission of science are certainly required, and I am confident that Rice is well endowed with the resources needed for this demanding task.

Another equally staggering problem is posed by the astounding rate which scientific and technological progress has attained. The massive scientific effort in nuclear energy and more recently in space has generated as a by-product an annual crop of new materials, devices, and instruments of wide applicability and importance. The feedback of this profusion of new technology into the industrial complex at an accelerating rate represents an impact on the whole of society of unprecedented proportions. We need point only to such examples as the outgrowth of the development of computers in leading to large-scale automation through elaborate automatic systems controls; the impact of nuclear technology and missiles on warfare and international relations; the radical changes in the communications industry brought about successively by microwave radar, transistors, and masers; and the impact on industry, medicine, and agriculture of the availability in quantity of a wide range of new radioactive materials. The rate of obsolescence has become so great that serious problems are raised for industrial and commercial management and planning. The frequency with which the whole social, economic, and political structure is called upon to make radical adjustments to new patterns is of a totally different order of magnitude from its prewar level. The strain of all this is great, and the prospects in the immediate future are for an intensification of the problem rather than any relaxation.

This has profound implications for universities. Not only are there grave problems of redirecting and adjusting the content and character of both undergraduate and graduate education in order to prepare students to play an effective role in a world of such drastic and radical change, but there is also the role of the university in assisting society in finding appropriate means of adjustment to these changes. No institutions other than universities are in a position to carry out the necessary research and to develop on the basis of it positive approaches to a solution of such problems. Certainly this situation will represent a major concern and challenge for Rice throughout the last half of her centennial years. It is gratifying to know that she already possesses the quality of leadership, the human resources of an outstanding faculty, and incomparable physical resources for meeting this challenge imaginatively and effectively. The degree to which she rises fully to it in the years ahead will in no small part become a measure of her stature and greatness.

More than anything else, this has become the age of Big Science. The vast national laboratories of the Atomic Energy Commission, Cape Canaveral, and the new Manned Spacecraft Center here in Houston; the high-energy accelerators at California, Stanford, Brookhaven, and Argonne; monolithic nuclear reactors; giant radiotelescopes—these are visible physical signs of this Big Science. Several distinguished universities have become infected by Big Science and, in addition to their primary role as institutions of higher education, have become managers and operators of large auxiliary laboratories and facilities. M.I.T. has an enormous operation of this character; Chicago operates the Argonne National Laboratory; California has the Lawrence Radiation, Livermore, and Los Alamos

laboratories; Princeton has its high-energy accelerator and Project Matterhorn; and Cal Tech has its space-flight center.

Opinions vary as to whether this is the wisest direction of development for universities. For myself, I rejoice that Rice has so far successfully resisted this temptation. Not that Rice is remote from these exciting developments of Big Science in our age. On the contrary, the University was instrumental in bringing both the Manned Spacecraft Center of NASA and the Mohole Project for drilling into the earth's mantle to Houston, and students and faculty will have a close association with these two exciting undertakings. Through its long-standing membership in my own organization, the Oak Ridge Institute of Nuclear Studies, Rice has participated actively in the atomic energy project both at Oak Ridge and at other laboratories. In all these areas, Rice University has been an active participant without the heavy burden of management responsibility which others have assumed. This, it seems to me, has been a wise course to follow, and I trust the same policy will be adhered to in the future.

While we are on the subject of Big Science, I may perhaps be permitted a bit of personal reminiscence. When I entered Rice to begin graduate work, physics was a comparatively minor activity in the world at large, and it excited very little public attention, interest, or support. It was not uncommon to find people who, on asking me what field I was in, were completely unfamiliar with the term "physicist." A few professors had consultant arrangements locally with an oil company or a geophysical firm, but even that was not common. None of them served on government commissions or boards, and it was rare for any of them to be away from the University. At the spring meeting in Washington, the whole membership of the American Physical Society could easily be gathered on the lawn of the National Bureau of Standards. It was an exciting time in physics and a thrilling thing for a young graduate student to enter into it. Jobs were hard to come by at graduation, and salaries were low even by depression standards. The world largely ignored us, and it was difficult to obtain sufficient funds for even modest research equipment. A small cyclotron or Van de Graaff accelerator was a major installation.

In retrospect, I must confess to a certain nostalgia for a vanished epoch when most of science was much as I have described physics as being during my graduate-student days at Rice. There was a purity about it, a sense of vocation and call on the part of professors and students alike, which made the pursuit of physics an exalted and glorious thing. Of course, there is much of the same dedication in numerous cases today. But it is no longer as simple and clear cut as it was, now that we are in the midst of the age of Big Science. The world is too much with us, and, as a result, motivations are mixed, pressures from all sides mount, and the physicist's life is an increasingly harried one. Perhaps this is a factor in my having more recently been drawn to theology. It is today much as physics was then—of absorbing interest and significance but largely ignored by the contemporary world.

Having said this, however, it is necessary to remark that Rice, more

than the majority of institutions, has preserved a great deal of this earlier purity and dedication to the highest standards of liberal learning. The Physics Department is much larger now than it was in my day, but each time I revisit it I am delighted to find preserved in it much of the same spirit that it had then. The same is true throughout Rice. Rare indeed are the examples of other institutions which equal Rice in steering a course into the age of Big Science, maintaining an outstanding research record in science and engineering without at the same time undermining the character of the university as a community of scholars small enough to be manageable and still devoted to the best in the liberal tradition of Western learning. The recent establishment of the college system at Rice is a case in point.

The pressures for bigness and for thrusting upon universities heavy auxiliary management responsibilities can only grow in the years ahead. My wish for Rice is that it will continue to resist them successfully as it has in the past. With sufficient wisdom and vision it should be possible to benefit fully from all the exciting new developments in science and technology which lie ahead without at the same time radically altering the character of the institution. With the inauguration of Kenneth Pitzer as our third President, that kind of wisdom and vision is assured. The first fifty years have seen the creation of a truly great and outstanding university. The next fifty hold out to us tonight the high promise of the achievement of even greater distinction in the years ahead. We alumni must dedicate ourselves to the task of insuring that the institution will not lack the resources she will require to fulfill this promise.

It is not only in science and technology that the revolutionary character of our age manifests itself. Indeed, it is a fateful mark of our age that the scientific revolution should have reached a crescendo in the midst of the cold-war struggle between the free world and communism and an age marked by a world-wide revolution of rising expectations among long dormant and underdeveloped peoples and nations. The superposition of these three major revolutionary forces makes the mid–twentieth century an age of upheaval and radical change without parallel in the span of world history. No one can know how such an age will turn out or what trials and difficulties we shall have to confront as we pass through it. But the one thing we do know is that for the preservation of all that is precious in our heritage, we must look primarily to those two institutions which have played such a major role in the shaping of Western civilization—the church and the university. From them will be derived the courage and steadfastness, the vision of truth and of greatness, which alone can carry the civilization we all cherish through the dark and stormy seas which now rage about us on every hand. As we deal with the host of immediate and particular problems which beset the university, we must always keep in the forefront of our thinking this central role and importance of an institution like Rice University for the whole of our civilization. May this be the key element in our search for guidance through the remainder of the first centennial of Rice University.

The dinner closed with the pronouncement of the benediction by the Reverend Leslie LeGrand.

The Homecoming Wreath-laying Ceremony

Following the established Homecoming tradition, members of the class observing its twenty-fifth anniversary laid a wreath on the statue of William Marsh Rice in the Academic Court. The ceremony began at 10:00 A.M., October 13, 1962, with the playing of "Taps," while an honor guard of R.O.T.C. cadets and midshipmen stood at attention. Mrs. A. Ross Rommel and Everett Collier of the Class of 1937 then placed the wreath on the steps before the statue. The ceremony ended with a prayer by the Reverend Harry Holmes, also of the Class of 1937.

Dedication of Rayzor Hall

Rayzor Hall, the new humanities building, was dedicated in simple ceremonies held just outside the northeast door to the building at 10:30 A.M., October 13, 1962. President Pitzer presided and spoke warmly of the generosity of Mr. and Mrs. J. Newton Rayzor, who had given the funds for the construction of this handsome and much-needed addition to the campus. He then introduced Dr. William H. Masterson, Dean of the Humanities, who spoke on "The Humanities at Rice." His remarks follow:

Ladies and Gentlemen: It is an honor and a pleasure for me to say these few words to you on this, one of our several days of dedication. This is of course a particular day of significance for us in this division of the University, but the condition which Chancellor Croneis described in an early meeting—"Never have so many with so much to say been so unable to say it"—this situation if it existed has certainly been remedied in the last three days. Consequently, in deference to the wisdom that has been uttered and that which will be uttered in the various convocations of this year's celebration, no less than through respect for the vigor of the climate, I shall sharply limit my remarks this morning.

I would have you consider, however, that, in all the loose and generalized talk about the humanities, the fact is that the world will expect much —perhaps too much—of the students to whose studies this building is dedicated. For from the humanist we expect, first, that he shall be that elusive and mythical figure, "the well-rounded man." This means, I suppose, that, besides tolerance, humor, judgment, integrity, and a host of other intangibles which are probably really innate, he must also acquire more than just a dash of economics, political science, history, sociology, psychology, and all other disciplines that any particular speaker happens to admire, else his education in the eyes of that speaker has certainly failed.

In the second place, he is required to be knowledgeable about such

rather abstruse matters as how to eliminate wars, how to civilize African tribes quickly and painlessly, the effects of tissue malformation on human personality, or how to manage large corporations or college professors—all this or else his education has failed.

In the meantime, our incipient humanist must subject himself to an intellectual specialization called a "major," in which such problems as the *explication du texte* or the problem of causation in history demand intellectual effort and application no less rigorous than the more publicized demands of the scientific laboratory.

Again, if our world is changing seismologically, if our society is being transformed by an exploding universe, so our humanistic questions are becoming incalculably difficult. What will technology do to the family and its relationships? Where will our values come from in a world where traditional religious values are being swamped by a universal materialism? What is the effect of the impossibility of survival in atomic warfare on the science of politics or on such concepts as nationalism and sovereignty? Surely the exploding universe is exploding in the face of the humanist as well as that of the scientist, and our time for the solution of these vital problems seems frighteningly short.

If boundless expectation is the highest compliment of our society for a man, surely the humanist is the most flattered of scholars. However, both the nature of his discipline and the demands of society deny him that singleness of purpose and specialization by which the scientist is allowed to particularize for the solution of his problems.

And, finally on this subject, not only must our student know these difficult answers (if they exist)—not only must he also be able to express his concept of his universe through his economic system, his architecture, his literature, or his music—he must also have freedom and encouragement to speculate in the purely whimsical and impractical, the purely theoretical and conjectural. For this is the central feature of the life of the mind. Speculation on the Mona Lisa's smile or the gargoyles of Notre Dame is as vital to the humanist as the vaulted halls of Aristotle's metaphysics or the sometimes arid plains of John Locke's principles of government. The purpose of the humanities is not, as one speaker this week has said, to enable the scientist to go forward. The purpose of the humanities is to understand man in all his multitudinous aspects, and among these aspects are certainly those of the imaginational and the idealistic. To say that an understanding of men and among men may be essential to us lest we are blown up physically or figuratively along with our planet is not to say that all humanistic learning is devoted to some pragmatic or practical end.

Now, what of our University and this humanist? Well, we shall of course meet these varied demands of humanism. We shall provide in this and other buildings courses of broad implication for all men—in written and spoken language, in appreciation of art and literature, in history, in anthropology and psychology, in economic thought, and in philosophical structure and ideas.

Second, we shall provide for the undergraduate specialist that directed

and motivated course structure which gives meaning to his native interests. We shall provide courses for the future man or woman in government service, for the future teacher of our children, for the preparation of professional men in law, medicine, or any of the other numerous business vocations.

And, third, we shall provide the means through superior faculty and greater facilities in the library, our laboratory, to push back further and ever further the bounds of human knowledge about humanity. Our aim is to become a citadel of *new thought* as well as of sound learning.

It pleases me to report to you the progress in numbers of those students so dedicated. The last war struck us hard indeed. From 670 undergraduates in the liberal arts in 1940–41, we dropped through the war to 326 in 1946. In graduate students we dropped during the same period from 54 to 12, and in faculty from 34 to 20. From 1946 until the present semester, however, we have risen in undergraduate humanities majors from 326 to over 1,000; in graduate students from 12 to 94; and in faculty from 20 to 103. The language laboratories, classrooms, anthropological and psychological laboratories, and, above all, the vital space for faculty study and counsel with students provided by this building, as well as the space it furnishes by removing pressure elsewhere—all these will add further substance to this growth in numbers of our students.

Finally, I come to the most pleasant and the most difficult of these remarks. Most pleasant, because I can give public utterance to general sentiment. Difficult, because of the magnitude of this gift to the disciplines to which I have dedicated my life. Difficult, also, because I know full well the stern edicts of Rayzor modesty and self-effacement.

The unceasing affection of Newton and Eugenia Porter Rayzor for this University, their deep commitment not only to the humanities but also to every cause that broadens or enobles human life—these are too well known for embellishment here.

I can therefore say to them only that we of the humanistic disciplines will find renewed courage, renewed enthusiasm, and renewed dedication for the tasks of which I have spoken. We shall find this through this visible token of your concern for us and for the intellectual ideas which we, however imperfectly, do serve.

Mr. Rayzor, a member of the Rice Class of 1917 and a Trustee of the University, responded with informal remarks on the great opportunities which existed to advance the interests of the University through a program of generous giving by its friends and alumni.

The ceremonies were closed by President Pitzer, who expressed once more on behalf of the University his gratitude for the generous gift of Mr. and Mrs. Rayzor.

Other Alumni Activities

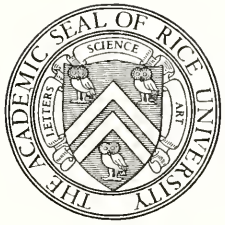
The Alumni Brunch was held in the Grand Hall of the Rice Memorial Center at 11:00 A.M., October 13, 1962. Following greetings

from President Willoughby Williams, the toastmaster, William Blanton, introduced the Reverend Lin D. Crossman, who gave the invocation. Robert L. Clarke, President of the Student Association, extended a welcome to the alumni from the student body. Following the meal, Dr. Emmett Hudspeth of the Class of 1937 spoke extemporaneously.

After the annual business meeting and the assembling of the Executive Board and new Directors in the Alumni office, everyone adjourned to Hamman Hall at 1:15 P.M. to see a showing of the Alumni Semicentennial Film, "Golden Years."

President Pitzer presented his greetings to the alumni at this time, and Willoughby Williams introduced the film showing by presenting the persons responsible for its preparation. Mr. and Mrs. Shad Graham (Mrs. Graham being the former Ruth McLain of the Class of 1928), who produced the film, and Mrs. Grace Leake Watts of the Class of 1922, who prepared the script, received a solid round of applause, which was repeated with emphasis at the end of the film. All those present were highly impressed by the superior quality of the film and grateful for the tremendous work done by the Grahams and Mrs. Watts in making it a reality.

The Homecoming was concluded by a football game at 8:00 P.M. with the University of Oregon and by the crowning of Danna Holmes as Homecoming Queen during the half-time ceremonies. Regrettably, Rice was on the wrong end of a 31 to 12 score for the evening.



DELEGATES OF INSTITUTIONS OF HIGHER LEARNING

AND OF

LEARNED AND PROFESSIONAL SOCIETIES AND OTHER INSTITUTIONS

Delegates

Institutions of Higher Learning

1100	Oxford University	Allan Nevins
XII Century	University of Paris	Louis Landré
XII Century	Cambridge University	Geoffrey Ingram Taylor George Paget Thomson
1425	Catholic University of Louvain	The Reverend Luke Miranda
1523	University of Zurich	Fritz Stüssi
1530	College of France	Szolem Mandelbrojt
1591	Trinity College, University of Dublin	Cresap S. Watson
1595	University of San Carlos, Philippines	The Reverend Raymond Kolk, S.V.D.
1624	Royal and Pontifical University of San Francisco Xavier, Bolivia	Armando Velez Arias
1636	Harvard University	John Hamman, Jr.
1693	The College of William and Mary	Hugh Trenwith Hancock
1696	Saint John's College, Annapolis	Robert H. Lampee
1701	Yale University	Henri Peyre Brand Blanshard
1740	University of Pennsylvania	Bruce H. McLoud
1746	Princeton University	Samuel M. McAshan
1749	Washington and Lee University	Thomas Dunaway Anderson
1754	Columbia University	William Maurice Ewing
1764	Brown University	General William C. Chase, U.S.A. (Ret.)
1765	Autonomous University of Querétaro	Alfonso Guerrero B.
1766	Rutgers, The State University	Melvin Friedman
1769	Dartmouth College	Roger D. Stanwood
1773	Dickinson College	A. Norman Needy
1776	Hampden-Sydney College	Daniel E. Jenkins
1780	Transylvania College	Dale R. Major

1785	University of Georgia	Claud B. Barrett
1787	Franklin and Marshall College	David B. Detweiler
1787	University of Pittsburgh	Frank O'Leary
1789	Georgetown University	Charles A. Perlitz, Jr.
1789	University of North Carolina	Howard Ward Beebe
1791	The University of Vermont	Arthur G. Levy
1793	Williams College	Alfred J. Knapp
1794	Bowdoin College	Daniel Colin Munro
1794	University of Tennessee	John C. Bolinger
1795	Union College and University (Schenectady, N.Y.)	Alan Lake Chidsey
1800	Middlebury College	Donald F. Weekes
1801	University of South Carolina	Rufus G. Fellers
1802	United States Military Academy	Major George D. Jackson
1804	Ohio University	Mrs. Samuel C. Harshman
1807	University of Maryland	William A. Nolte
1809	Miami University	R. Gommel Roessner
1812	Hamilton College	Donald W. Tappan
1813	Colby College	Timothy C. Osborne
1814	Kalamazoo College	Frank J. Ehrman
1817	The University of Michigan	Robert W. Kneebone
1818	Saint Louis University	Matthew H. Talty
1819	Centre College of Kentucky	Carroll Camden
1819	University of Virginia	A. Ross Rommel
1819	Maryville College	Mrs. David T. Branch
1819	Norwich University	Robert G. Carleton
1819	University of Cincinnati	Arthur C. Fennekohl
1820	Indiana University	John W. Ashton
1821	George Washington University	George A. Butler
1821	Amherst College	Garrett Tucker, Jr.
1821	McGill University	Berne L. Newton
1823	Trinity College, Hartford	Kenneth Willard Stuer
1824	Kenyon College	Francis W. Humphrys
1824	Rensselaer Polytechnic Institute	Maurice A. Riordan
1825	Centenary College of Louisiana	President Joe J. Mickle
1826	Furman University	H. Leroy Brockman
1826	Lafayette College	Thomas S. Hargest
1826	Mississippi College	Sebron C. Dale
1826	Western Reserve University	William Powell Jones
1827	Hanover College	John Edward Horner

1827	University of Toronto	Malcolm Ross MacPhail
1829	Illinois College	W. O. Milligan
1830	University of Richmond	Charles Phillips
1831	Denison University	H. Kendall Reynolds
1831	New York University	William N. Jahn
1831	University of Alabama	President Frank A. Rose
1831	Wesleyan University	Andrew Louis
1831	Xavier University, Cincinnati	Stanley R. Keller
1833	Haverford College	J. Howard Marshall, II
1833	Kalamazoo College	Frank J. Ehrman
1833	Oberlin College	James E. Boggs
1834	Tulane University	John Randolph Hubbard
1835	Albion College	J. Emery Gregory
1836	Davidson College	Herbert Meza
1836	Emory University	Charles T. Lester
1836	Technical University of Darmstadt	Alfred Mehmel
1837	DePauw University	Joseph E. Rench
1837	Knox College	Emmett Smith
1837	Mount Holyoke College	James Prince Warner
1838	Acadia University	John Harold Perry
1838	Duke University	W. W. Abbot
1839	Boston University	Lawrence Durwood Fleming
1839	University of Missouri	Henry S. McQueen
1839	Virginia Military Institute	Edward A. Stumpf, III
1840	Mount Allison University	Frederick Chapman Jonah
1840	Southwestern University, Texas	President Lawrence Durwood Fleming
1841	Fordham University	Vincent D. P. Hurley
1841	Queens University, Kingston, Ontario	Stuart A. Wallace
1842	Hollins College	Mrs. Frank J. Farese
1842	Ohio Wesleyan University	John O. King
1842	University of Notre Dame	M. E. Walter
1842	Villanova University	Frederick E. Linck
1842	Willamette University	Thelma Mills
1845	Baylor University	President Abner V. McCall
1845	College of Medicine of Baylor University	Dean Stanley W. Olson
1845	Mary Hardin-Baylor College	Thomas A. Dannelley
1845	United States Naval Academy	Captain Henry C. Spicer, Jr., U.S.N.

1846	Beloit College	Allen L. Jogerst
1846	Bucknell University	W. M. Drout, Jr.
1846	Grinnell College	Charles A. Rawson
1846	University of Buffalo	Jeanette Wenborne Caine
1847	Earlham College	Thomas Lester Swander
1847	Lawrence College	Edwin N. West
1847	State University of Iowa	Donald C. Streeter
1848	Southwestern at Memphis	Sylvester W. Thorn
1848	University of Mississippi	William Alton Bryant
1848	The University of Ottawa, Canada	The Reverend Bernard Doyon, O.M.I.
1849	Austin College	President John D. Moseley
1850	University of Rochester	Robert S. Moehlman
1850	University of Utah	Alma Nemir
1851	Hope College	Jerold P. Veldman
1851	Northwestern University	Mrs. H. Gardiner Symonds
1851	University of Minnesota	Fred J. Agnich
1852	Antioch College	Percy Selden
1852	Saint Mary's University, San Antonio	President Charles W. Neumann
1852	Tufts University	Hubert E. Bray
1852	Westminster College, Pennsylvania	Mrs. Charles F. Underwood
1853	University of Florida	David Weintraub
1853	Washington University	Russell L. Jolley
1854	Polytechnic Institute of Brooklyn	Martin H. Graham
1854	Swiss Federal Institute of Technology	Fritz Stüssi Vladimir Prelog
1855	Assumption University of Windsor, Ontario	President Emeritus V. J. Guinan
1855	Michigan State University	Richard I. Evans
1857	Florida State University	Howard E. Taylor
1858	Iowa State University of Science and Technology	Rowland R. Manatt
1859	Whitman College	James R. Templeton
1860	Louisiana State University and Agricultural and Mechanical College	President John Anderson Hunter J. Howard Rambin, Jr.
1861	Massachusetts Institute of Technology	George Scatchard Claude E. Shannon
1861	University of Colorado	Eldridge C. Thompson

1861	University of Washington	Gaston V. Rimlinger
1861	Vassar College	Mrs. Ernest B. Fay
1863	The American Colleges in Istanbul	Ali Bulent Cambel
1863	Kansas State University of Agriculture	Samuel Kelsall, III
1863	University of Massachusetts	Ralph Ellis Gunn
1864	Bates College	Raymond Walden Hobbs
1864	Swarthmore College	L. Keith Simmer
1864	University of Denver	Eugene H. Hughes
1865	Cornell University	Kenneth D. Owen
1865	Lehigh University	George Sawtelle
1865	Washburn University of Topeka	Kenneth A. Fleming
1865	Worcester Polytechnic Institute	Donald F. Sears
1865	University of Kansas	Warren S. Bellows
1866	American University of Beirut	Edmond Mitri Saad
1866	Carleton College	Esther E. Eby
1866	University of New Hampshire	J. B. Flansburg
1867	University of Illinois	E. Allan Williford
1867	West Virginia University	Joseph L. Keener, Jr.
1868	Oregon State University	Ferrin B. Moreland
1868	University of California	Robert B. Brode Bertrand H. Bronson Robert E. Connick Willard Frank Libby Herman T. Spieth
1868	Wayne State University	Noreen A. Lemak
1869	Purdue University	C. W. Howe
1869	Southern Illinois University	John Erle Grinnell
1869	Trinity University, San Antonio	Bruce Thomas
1869	University of Nebraska	Louis H. Lukert
1870	Colorado State University	Albert B. Connelly
1870	Stevens Institute of Technology	John V. Pennington
1870	Syracuse University	John E. Schermerhorn
1870	The University of Akron	Mrs. Robert J. Maloney
1870	Wellesley College	Mrs. Jerold Wizowaty
1871	Central Missouri State College	John E. Bishop
1871	Smith College	Mrs. Farrand Flowers
1871	University of Arkansas	Marvin Hurley
1872	Vanderbilt University	Milton R. Underwood
1873	Texas Christian University	Chancellor M. E. Sadler J. M. Moudy
1874	Colorado College	Dwight S. Brothers

1874	Colorado School of Mines	Truman H. Kuhn
1874	University of Nevada	Gordon C. Mills
1875	George Peabody College for Teachers	B. N. Hastings
1876	Agricultural and Mechanical College of Texas	President Earl Rudder
1876	The Johns Hopkins University	Charles I. Silin
1876	Prairie View Agricultural and Mechanical College	President E. B. Evans
1876	Texas Agricultural and Mechanical College System	Chancellor M. T. Harrington
1877	Tokyo University	Sakae Yagi
1878	Mississippi State University	Prentiss G. Crowe
1878	University of Western Ontario	The Reverend A. P. Caird
1879	Radcliffe College	Wilma A. Kerby-Miller
1879	Sam Houston State Teachers College	President Harmon Lowman
1880	Case Institute of Technology	President T. Keith Glennan
1880	University of Southern California	Thomas P. Nickell, Jr.
1881	Drake University	Joseph D. Robinson
1881	Newark College of Engineering	John Garratt
1881	The University of Texas	Chancellor Harry Huntt Ransom
1883	University of North Dakota	H. E. Treichler
1885	Arizona State University	Gerald T. Bednarz
1885	Bryn Mawr College	Mary Kirkland Vandervoort
1885	Georgia Institute of Technology	Howard Tellepsen
1885	Goucher College	Marjorie Groothuis Horning
1885	Michigan College of Mining and Technology	Lyon L. Brinsmade
1885	Rollins College	C. M. Butler
1885	Saint Edward's University, Austin	President Raymond Fleck
1885	Stanford University	H. Gardiner Symonds
1885	University of Arizona	Thomas H. Ballantyne
1886	John Carroll University	Paul F. Waldner
1887	Clark University	Joseph H. Rosenbaum
1887	McMaster University	C. W. Perkins
1887	North Carolina State College of Agriculture and Engineering of the University of North Carolina	Frank Weaver
1887	Occidental College	Peter Kellaway
1887	Pomona College	Wendell B. Steward
1887	Pratt Institute	Robert E. Moore, Sr.
1889	Agnes Scott College	Mrs. Hardin Craig, Jr.

1889	Barnard College	Mrs. Melvin Fincke
1889	The Catholic University of America	Robert Hamilton Kelley
1889	The Clemson Agricultural College of South Carolina	Victor Hurst
1889	Converse College	Charles DeLoach Ashmore
1889	New Mexico State University	Walter B. Hill
1889	North Dakota State University	Loren B. Odell
1889	University of New Mexico	John F. Fallis, Jr.
1890	Oklahoma State University	W. W. Cramer
1890	University of British Columbia	Jack M. Bickerton
1890	University of Oklahoma	W. J. Goldston
1890	Washington State University	John Haworth Jonte
1891	California Institute of Technology	Ward Whaling
1891	Drexel Institute of Technology	Julian B. McFarland, Jr.
1891	Hardin-Simmons University	William Truett Welton
1891	Randolph-Macon Woman's College	Mrs. William J. Miller
1891	Texas Lutheran College	Acting President Arthur G. Gustafson
1891	University of Chicago	Warren C. Johnson
1891	The University of Texas Medical Branch	Dean John B. Truslow
1891	Woman's College of the University of North Carolina	Chancellor Otis A. Singletary
1892	Illinois Institute of Technology	Stanley Owens
1892	Keuka College	Mrs. E. A. Williford
1892	Millsaps College	Robert V. Haynes
1892	Municipal University of Wichita	Alvin R. Winzeler
1893	American University	Howard A. Thompson
1893	Montana State College	Byron B. Bennett
1893	Montana State University	Frank M. Kerr
1894	The University of Tulsa	Patrick Welch
1895	Arlington State College	President J. R. Woolf
1896	Our Lady of the Lake College	President John L. McMahon
1897	Bradley University	Doris E. McKinlay
1897	San Diego State College	President Malcolm Andrews Love
1899	Southwest Texas State College	Joe H. Wilson
1900	Carnegie Institute of Technology	Harry D. Kolb
1901	Sweet Briar College	Mrs. John B. Evans
1901	Texas Woman's University	President John A. Guinn
1904	Oklahoma City University	Raymond J. O'Keefe, Jr.

1905	Central Philippine University	Noel Gonzaga
1906	Abilene Christian College	President Don Heath Morris
1907	University of Redlands	Richard E. Hazard
1908	Wayland Baptist College	President A. Hope Owen
1910	Bowling Green State University	Judson D. Ellertson
1910	Kent State University	Philip F. Finnegan
1910	University of Southern Mississippi	H. O. Hunt
1911	Southern Methodist University	President Willis M. Tate
1912	East Texas Baptist College	President Howard C. Bennett
1913	Texas Western College	President Joseph M. Ray
1917	Sul Ross State College	President Bryan Wildenthal
1918	Ball State Teachers College	J. Marvin Sipe
1922	Midwestern University, Wichita Falls	Floyd Ewing
1923	Lamar State College of Technology	President F. L. McDonald
1923	Texas Technological College	W. M. Pearce
1925	Bennington College	Mildred Wile Hirsh
1925	Texas College of Arts and Industries	President James C. Jernigan
1925	University of Miami	Mrs. Alberta Losh Vaughan
1926	Scripps College	President Frederick Hard
1928	National Taiwan University	S. F. Chien
1929	University of Kansas City	Frederick C. Elliott
1930	Brooklyn College of the City University of New York	Elmer Eisner
1934	University of Houston	President Philip G. Hoffman
1935	Autonomous University of Guadalajara	Oscar Wiegand
1937	National Polytechnic Institute, Mexico City	J. A. Padilla Segura
1943	The University of Texas Dental Branch	Dean John Victor Olson
1945	Sacred Heart Dominican College	President Sister M. Antoinette, O.P.
1946	Australian National University	Jerzy Zubrzycki
1946	Claremont Men's College	Gordon M. Anderson
1947	Texas Southern University	President S. M. Nabrit
1947	University of St. Thomas	President John F. Murphy, C.S.B.
1948	Brandeis University	Joe Weingarten
1949	The University of Texas Postgraduate School of Medicine	Dean Grant Taylor

1949	University of Texas Southwestern Medical School	Frank Harrison
1952	University of Karachi	S. A. Khan
1955	Harvey Mudd College	President Joseph B. Platt
1955	United States Air Force Academy	Major Robert B. Underwood

Learned and Professional Societies and Other Institutions

1603	National Academy of the Lincei, Rome	Albert Szent-Györgyi Jacob Viner
1662	The Royal Society, London	Geoffrey Ingram Taylor
1666	Academy of Sciences, Institute of France	Jean Leray
1743	American Philosophical Society	Theophilus S. Painter
1754	Royal Society of Arts	William V. Houston
1780	American Academy of Arts and Sciences	Marion King Hubbert
1812	American Antiquarian Society	Allan Nevins
1837	The Philosophical Society of Texas	E. B. Germany
1839	American Statistical Association	Paul D. Minton
1844	American Psychiatric Association	A. Hauser
1847	American Medical Association	George W. Waldron
1848	The American Association for the Advancement of Science	Margaret Mead
1852	American Society of Civil Engineers	Mason G. Lockwood
1857	American Institute of Architects	Harold Calhoun John Lyon Reid
1863	National Academy of Sciences	Glenn T. Seaborg
1869	American Museum of Natural History	Margaret Mead
1869	American Philological Association	Harry J. Leon
1871	American Institute of Mining, Metallurgical and Petroleum Engineers	Herbert F. Beardmore
1876	American Chemical Society	President Karl Folkers
1876	American Library Association	Edward Holley
1879	Archaeological Institute of America	Edward M. Weyer, Jr.
1880	American Society of Mechanical Engineers	President Clifford H. Shumaker
1882	American Association of University Women	June Hyer
1883	Modern Language Association of America	Charles I. Silin
1884	American Historical Association	Barnes F. Lathrop

1884	The American Institute of Electrical Engineers	Norman F. Rode
1885	American Association for Health, Physical Education, and Recreation	Arthur Weston
1885	American Economic Association	Joel Sailors
1885	The Tau Beta Pi Association	Paul E. Pfeiffer
1886	Society of Sigma Xi	Richard J. Baldauf
1887	Association of State Universities and Land-Grant Colleges	M. T. Harrington
1888	American Mathematical Society	Hubert E. Bray
1888	The American Physiological Society	Roy V. Talmage
1888	The Geological Society of America	President Marion King Hubbert
1888	Marine Biological Laboratory	Albert Szent-Györgyi
1889	The American Academy of Political and Social Science	Kenneth S. Tollett
1894	American Academy in Rome	Kent Kennan
1894	American Sociological Association	Ivan Belknap
1894	Botanical Society of America	B. L. Turner
1895	National Association of State Universities	Harry H. Ransom
1895	Southern Association of Colleges and Secondary Schools	Albert J. Geiger
1897	The College Physical Education Association	Gilbert L. Hermance
1899	American Physical Society	Lynn G. Howell
1901	The American Philosophical Association	Radoslav Tsanoff
1902	American Anthropological Association	T. N. Campbell
1903	Faraday Society	W. O. Milligan
1906	Illuminating Engineering Society	James W. Griffith
1907	Association of American Rhodes Scholars	Robert Eikel
1908	American Institute of Chemical Engineers	W. B. Franklin
1912	Institute of Radio Engineers	Gordon K. Teal
1913	The American Alumni Council	Everett E. McQuillen
1915	American Association of University Professors	Truman J. Barber
1915	Association of American Colleges	Philip G. Hoffman
1915	Mathematical Association of America	W. T. Guy, Jr.
1917	American Association of Petroleum Geologists	Edgar W. Owen
1918	American Council on Education	Harry Huntt Ransom

1919	American Council of Learned Societies	Roger P. McCutcheon
1919	American Geophysical Union	Cecil H. Green
1919	American Petroleum Institute	L. F. McCollum
1919	Henry E. Huntington Library and Art Gallery	Allan Nevins
1920	Royal Institute of International Affairs	Arnold Toynbee
1925	John Simon Guggenheim Memorial Foundation	J. S. Vandiver
1932	Institute of Aerospace Sciences	Martin Goland
1934	Alfred P. Sloan Foundation	L. H. Farinholt
1934	The Association of Colleges and Secondary Schools	John E. Codwell
1934	National Society of Professional Engineers	Noah E. Hull
1934	Southern Historical Association	President Rembert W. Patrick
1936	The Society of American Archivists	Richard O. Jonas
1946	National Association of Corrosion Engineers	Charles C. Nathan
1946	Oak Ridge Institute of Nuclear Studies	William G. Pollard
1948	American Geological Institute	Gordon Rittenhouse
1950	National Science Foundation	Alan T. Waterman
1953	United States Steel Foundation	John L. Mortimer
1954	The Robert A. Welch Foundation	W. T. Doherty
1955	American Nuclear Society	Clark Goodman
1957	Woodrow Wilson National Fellowship Foundation	Roger P. McCutcheon
1961	Council of Graduate Schools	George Holmes Richter

The William Marsh Rice University Student Body
Robert L. Clarke, President of the Student Association
The Association of Rice Alumni
Willoughby Williams, President
Everett Collier, President-Elect